Vol. 1053 — Number 3

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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August 9, 1983 Volume 1033 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

Dec. 3, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,962,443, Re. S.N. 409,425, Filed Aug. 19, 1982, Cl. 424/251, ANTIBACTERIAL PHARMACEUTICAL COMPOSITIONS AND PROCESSES FOR PREPARATION THEREOF, Shinsaku Minami, et al., Owner of Record: *Dainippon Pharmaceutical Co., Ltd., Osaka, Japan,* Attorney or Agent: Richard A. Steinberg, Ex. Gp.: 125

4,002,354, Re. S.N. 503,522, Filed June 13, 1983, Cl. 280/614, SKI BINDING, Paul C. Ramer, Owner of Record: *Alqine Research Inc., Golden, Colo.,* Attorney or Agent: Gary M. Polumbus, Ex. Gp.: 316

4,080,542, Re. S.N. 458,195, Filed Jan. 17, 1983, Cl. 310/159, HIGH DENSITY FLUX MAGNETIC CIRCUIT, Albert L. Degraffenried, Owner of Record: *Kollmorgen Corp., Dallas, Tex.,* Attorney or Agent: Christopher A. Hughes, Ex. Gp.: 212

4,104,240, Re. S.N. 492,266, Filed May 6, 1983, Cl. 524/539, HIGH SOLIDS PIGMENT COATING COMPOSITION, Roelof Buter, Owner of Record: *Akzo N. V., Arnhem, Netherlands,* Attorney or Agent: Ellsworth H. Mosher, Ex. Gp.: 142

4,132,398, Re. S.N. 414,520, Filed Sept. 2, 1982, Cl. 271/9, APPARATUS FOR REMOVING SHEETS FROM STACKS, Otto Erdmann, et al., Owner of Record: *Hauni-Werke Korber & Co., KG, Hamburg, Federal Republic of Germany,* Attorney or Agent: Charles W. Grimes, Ex. Gp.: 312

4,184,128, Re. S.N. 346,157, Filed Feb. 5, 1982, Cl. 331/113A, HIGH EFFICIENCY PUSH/PULL INVERTERS, Ole K. Nilssen, Owner of Record: *Hong Kong & Shang Hai Banking Corp., Hong Kong,* Attorney or Agent: John K. Lucas, Ex. Gp.: 252

4,247,388, Re. S.N. 461,300, Filed Jan. 22, 1983, Cl. 208/111, HYDRODEWAXING CATALYST PERFORMANCE, Frederick Banta, et al., Owner of Record: *Mobil Oil Corp., Fairfax, Va.,* Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 116

4,272,864, Re. S.N. 504,661, Filed June 15, 1983, Cl. 17/45, METHOD FOR MAKING FOOD PATTY, Harry H. Holly, Owner of Record: *Hollymatic Corp., Park Forest, Ill.,* Attorney or Agent: Lois Besanko, Ex. Gp.: 322

4,275,303, Re. S.N. 502,649, Filed June 9, 1983, Cl. 250/342, PASSIVE INFRARED INTRUSION DETECTION SYSTEM, Philip H. Mudge, Owner of Record: *Arrowhead Enterprises, Inc., Mannedorf, Switzerland,* Attorney or Agent: Granville M. Brumbaugh, Ex. Gp.: 256

4,275,566, Re. S.N. 502,367, Filed June 8, 1983, Cl. 62/55.5, CRYOPUMP APPARATUS, John W. Bonn, Owner of Record: *Pennwalt Corp., Philadelphia, Pa.,* Attorney or Agent: Arthur H. Seidel, et al., Ex. Gp.: 344

4,322,303, Re. S.N. 594,715, Filed June 15, 1983, Cl. 252/46.6, DITHIOPHOSPHATE STABILIZERS, Siegfried Rosenberger, Owner of Record: *Ciba-Geirgy Corp., Ardsley, N.Y.,* Attorney or Agent: Karl F. Jorda, et al., Ex. Gp.: 116

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,549,540, Reexam. No. 90/000,414, Requested: July 1, 1983, Cl. 252/105, METHOD AND COMPOSITIONS FOR TREATING ALUMINUM SURFACES, David Y. Dollman, Owner of Record: *Amchem Products, Inc., Ambler, Pa.,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 166, Requester: Owner

3,752,159, Reexam. No. 90/000,399, Requested: June 7, 1983, Cl. 128/303.15, RESECTOSCOPE CUTTING ELECTRODE, Reinhold D. Wappler, Owner of Record: *American Hospital Supply Corp., Evanstan, Ill.,* Attorney or Agent: Edgar N. Jay, Ex. Gp.: 330, Requester: Greenwald Surgical Co., Inc., Lake Station, Ind.

3,835,464, Reexam. No. 90/000,415, Requested: July 5, 1983, Cl. 340/710, POSITION INDICATOR FOR A DISPLAY SYSTEM, Ronald E. Rider, Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent:

Ronald Zibelli, Ex. Gp.: 230, Requester: Xerox Corp., Rochester, N.Y.

4,264,611, Reexam. No. 90/000,413, Requested: June 30, 1983, Cl. 546/321, 2,6-DIMETHYL-4-2,3-DISUBSTITUTED PHENYL-1,4-DIHYDRO-PYRIDINE-3,5-DICARBOXYLIC ACID-3,5-ASYMMETRIC DIESTERS HAVING HYPOTENSIVE PROPERTIES AS WELL AS METHOD FOR TREATING HYPERTENSIVE CONDITIONS AND PHARMACUTICAL PREPARATIONS CONTAINING SAME, Peder B. Berntsson, et al., Owner of Record: *Aktiebolaget Hassle, Molndal, Sweden,* Attorney or Agent: Brumbaugh, Graves, et al., Ex. Gp.: 120, Requester: Merck & Co., Inc., Rahway, N.J.

4,300,325, Reexam. No. 90/000,418, Requested: July 11, 1983, Cl. 53/143, HOLDER ASSEMBLY FOR CASE PACKING MACHINE, Barry Campbell, Owner of Record: *Requester,* Attorney or Agent: Wells, St. John & Roberts, Ex. Gp.: 324, Requester: R. A. Pearson Co., Spokane, Wash.

4,356,645, Reexam. No. 90/000,416, Requested: July 6, 1983, Cl. 37/281, VARIABLE WING PLOW BLADE AND MOUNTING STRUCTURE THEREFOR, Gordon Hine, et al., Owner of Record: *Logan Manufacturing Co., Logan, Utah,* Attorney or Agent: A. Ray Osburn, Ex. Gp.: 337, Requester: A. Ray Osburn, Ogden, Utah

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Need for Copies of Drawings Submitted in Patent Applications

The Patent and Trademark Office encourages applicants to submit two clear copies of the drawings, in addition to the original drawings submitted with newly filed patent applications. These copies are needed by the Patent Examining Corps during the prosecution of the case. Submission of the extra copies will allow us to reduce the processing time and costs for preparing applications for the examiners.

July 8, 1983.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 9, 1983

D. 266,336	4,345,527	4,377,169	4,383,917
3,721,154	4,348,104	4,377,394	4,384,140
4,151,010	4,349,778	4,377,688	4,384,281
4,201,419	4,350,099	4,377,783	4,384,324
4,219,391	4,351,001	4,377,981	4,384,326
4,225,606	4,351,220	4,378,507	4,384,505
4,228,048	4,351,982	4,378,595	4,384,943
4,270,330	4,352,021	4,379,477	4,384,984
4,290,715	4,356,694	4,379,486	4,385,133
4,291,090	4,357,051	4,379,621	4,385,286
4,296,770	4,358,264	4,379,915	4,385,301
4,298,420	4,366,814	4,379,923	4,385,352
4,303,582	4,366,910	4,379,936	4,385,436
4,304,762	4,368,110	4,379,966	4,385,437
4,311,146	4,368,511	4,380,355	4,385,736
4,314,910	4,368,591	4,380,521	4,385,983
4,322,685	4,368,771	4,380,549	4,386,414
4,323,589	4,372,721	4,380,563	4,386,461
4,323,647	4,372,978	4,380,569	4,386,634
4,323,652	4,373,277	4,380,768	4,387,262
4,323,691	4,373,325	4,381,049	4,387,341
4,328,230	4,373,328	4,381,669	4,387,420
4,329,353	4,373,341	4,381,807	4,387,872
4,334,943	4,374,358	4,381,840	4,388,334
4,342,017	4,374,697	4,381,895	4,388,637
4,344,448	4,375,485	4,382,023	4,389,286
4,344,486	4,375,898	4,382,815	
4,345,042	4,376,817	4,383,026	
4,345,478	4,376,848	4,383,143	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
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Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

August 9, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,074,990 (111th)
METHOD OF PREPARING COLEMANITE-CONTAINING GLASS BATCH

Stanley F. Brzozowski, Coraopolis; Joseph E. Cooper, Brackenridge, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Reexamination Request No. 90/000,311, Dec. 27, 1982.
Reexamination Certificate for Patent No. 4,074,990, issued Feb. 21, 1978, Ser. No. 739,884, Nov. 8, 1976.
U.S. Cl. 65/27 **Int. Cl.³ C03C *3/08*; C03B *5/16***

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 1–8 is confirmed.

1. A method of preparing a colemanite-containing glass fiber forming glass batch comprising introducing colemanite-containing batch ingredients into a pelletizing zone, agglomerating the ingredients with sufficient water to produce pellets containing about 5 to 20 percent by weight free water, heating the pellets at a temperature not greater than 770° F. (410° C.) and drying the pellets at that temperature for a period of time sufficient to thereby prevent disintegration thereof and form hard, non-dusting pellets.

B1 4,247,773 (112th)
METHOD FOR QUANTITATIVELY DETERMINING FAT IN A FAT-CONTAINING SAMPLE

Sten A. Nexo, Birkerod, Henrik R. Andersen, Kastrup, both of Denmark, assignors to Foss America, Inc., Auburn, Ill.

Reexamination Request No. 90/000,186, Apr. 2, 1982.
Reexamination Certificate for Patent No. 4,247,773, issued Jan. 27, 1981, Ser. No. 60,411, Jul. 25, 1979.
Claims priority, application Denmark, Dec. 6, 1978, 5516/78; Jul. 3, 1979, 2814/79.
U.S. Cl. 250/339 **Int. Cl.³ G01J *1/00***

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **8, 9, 11** and **12**, having been finally determined to be unpatentable, are cancelled.

Claims **1–5, 10,** and **13–15** are determined to be patentable as amended:

Claims **6** and **7**, dependent on amended claims, are determined to be patentable.

New claims **16–25** added and determined to be patentable.

1. A method for quantitative measurement of fat in a fat-containing sample *which is an aqueous fat emulsion and which in addition to fat, contains at least one other component containing saturated carbon-hydrogen bonds,* by an infrared *transmission* absorption technique, comprising transmitting infrared light through the sample [, determining the infrared absorption of the sample] *at a wavelength* in a waveband characteristic of saturated carbon-hydrogen bonds, *determining the infrared absorption of the sample at said wavelength,* [and] selectively, quantitatively assessing the fat content of the sample on the basis of said determination, *and compensating said quantitative assessment for undesired influences from said at least one other component.*

B1 4,096,202 (113th)
IMPACT MODIFIED POLY(ALKYLENE TEREPHTHALATES)

Sutton B. Farnham, Levittown; Theodore D. Goldman, Cornwell Heights, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Reexamination Request No 90/000,241, Aug. 11, 1982.
Reexamination Certificate for Patent No. 4,096,202, issued Jun. 20, 1978, Ser. No. 694,509, Jun. 9, 1976.
U.S. Cl. 525/64 **Int. Cl.³ C08L *67/06***

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. A composition comprising a blend of about 99 to 60% by weight of a poly(C_1—C_8 alkylene terephthalate) and about 1 to 40% by weight of a multi-phase composite interpolymer comprising:

(A) about 25 to 95 weight percent of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8% by weight C_1 to C_8 alkyl acrylate, 0.1 to 5% by weight crosslinking member, 0.1 to 5% by weight graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups, and,

(B) about 75 to 5 weight percent of a final, rigid thermoplastic phase polymerized in the presence of said elastomeric phase and is free of epoxy groups.

REISSUES

AUGUST 9, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,336
METHOD FOR ELECTRICAL CONNECTION OF FLAT CABLES

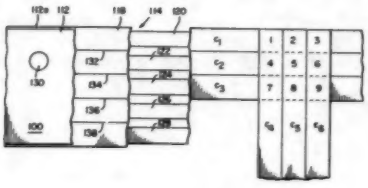
Karl Weinmann, Watchung; Ted L. C. Kuo, Fanwood, and Greenwood, William S., Nutley, all of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Original No. 4,249,303, dated Feb. 10, 1981, Ser. No. 42,440, May 25, 1979. Application for reissue Jul. 27, 1981, Ser. No. 287,463

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—868

13 Claims



1. A method for interconnection of flat multiconductor cables, comprising the steps of:

(a) placing one such cable in overlying relation to another such cable in manner providing a matrix of connection zones wherein each zone has a unique pair of cable conductors in registry therewith;

(b) selecting an origin connection zone having in registry therewith first conductors of said cables and precluding from connection use all other zones in registry with said first conductors;

(c) perforating said first conductors at said origin zone and making electrical connection therebetween; [

(d) providing for selection plural zones in registry with a second conductor of one of said cables and precluding from connection use all other zones in registry with said second conductor.]

(d) providing for selection first plural zones in registry with a second conductor of one of said cables said first plural zones being less than all zones in registry with such one cable second conductor, and providing second plural zones in registry with a third conductor of such one cable and thereby distinct from said first plural zones, said second plural zones being less than all such zones in registry with such one cable third conductor, one zone of each of said first plural zones and said second plural zones being in registry with a common conductor of the other of said cables, and precluding from connection use other zones in registry with said second and third conductors of such one cable; and

(e) selecting further zones for perforation and connection of conductors until connections are made to all conductors of at least one of said cables, each such further zone being selected [from the group] *such first and second pluralities* of zones *and other zones* which do not have in registry therewith any conductor in registry with any previously selected zone.

Re. 31,337
VEHICLE BRAKE SYSTEM

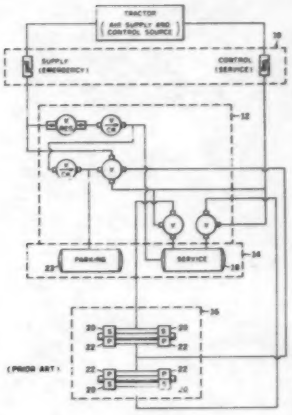
George W. Stearns, Florissant, Mo., assignor to Echlin Inc., Branford, Conn.

Original No. 3,992,064, dated Nov. 16, 1976, Ser. No. 637,644, Dec. 4, 1975. Division of Ser. No. 903,886, May 8, 1978, Application for reissue Sep. 28, 1978, Ser. No. 946,491

Int. Cl.³ B60T *13/28*

U.S. Cl. 303—7

5 Claims



4. A vehicle brake system comprising:

an air receiving portion including means for receiving air from a supply source;

a valve portion connected to the air receiving portion including a first plurality of like valve means separated for independently operating on the air received and for securing the air operated on from returning to the receiving portion;

a storage portion connected to the valve portion including a plurality of storage means separated for independently receiving the air from the first separated valve means, respectively, and for storing the air received;

a second plurality of like valve means, corresponding to the first valve means, separated in the valve portion and cooperatingly connected to the separated storage means, respectively, for selecting air from one of the storage means, for independently operating on the selected air, for securing the selected air from returning to its respective storage means and for further securing the selected air from passing to another of the storage means;

a brake portion including service brake means connected for receiving air from the storage means and also including parking brake means connected for receiving the selected air from the storage means;

pressure regulating valve means in the valve portion connected between the air receiving portion and the storage portion ofr permitting air above a predetermined pressure to pass therethrough;

brake operating valve means in the valve portion connected for receiving the selected air and for supplying the selected air to the parking brake means; and

further valve means in the valve portion corresponding to the like valve means connected between the air receiving

portion and the brake operating valve means bypassing the pressure regulating valve means.

Re. 31,338

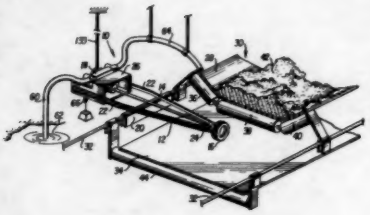
PUMP ASSEMBLY DRIVEN BY ENDLESS CONVEYOR

Frank K. Hurt, North Tazewell, Va., assignor to MEFCOR, Bluefield, Va.

Original No. 4,213,743, dated Jul. 22, 1980, Ser. No. 898,062, Apr. 20, 1978. Application for reissue Apr. 17, 1981, Ser. No. 255,137

Int. Cl.³ F04B *9/02, 17/00;* **F16H** *13/10;* **B65G** *21/00*

U.S. Cl. 417—229 **9 Claims**



9. In a belt conveyor drive system for underground mines, the combination with a conveyor including an endless belt having vertically spaced advance and return flights, whereof the advance flight rides on a pulley assembly supported at sides on side members extending substantially the length of the conveyor, of a pump assembly comprising a drive roller drivable off the advance flight, a pump drivably connected to said drive roller, a base mounting said drive roller and pump, and connector means connected to said base for releasably mounting said pump assembly in any selected operative position longitudinally of the conveyor.

Re. 31,339

PROCESS FOR PRODUCING ELEVATED TEMPERATURE CORROSION RESISTANT METAL ARTICLES

Louis E. Dardi, Muskegon, and William R. Freeman, Jr., North Muskegon, both of Mich., assignors to Howmet Turbine Components Corporation, Muskegon, Mich.

Original No. 4,145,481, dated Mar. 20, 1979, Ser. No. 821,546, Aug. 3, 1977. Application for reissue Sep. 24, 1979, Ser. No. 78,565

Int. Cl.³ B05D *3/00;* **B32B** *15/00*

U.S. Cl. 428—678 **11 Claims**

12. A method for coating a superalloy substrate with an oxidation-corrosion protective MCrAlY type coating where M is selected from the group consisting of nickel, cobalt and iron, comprising the steps of:

(a) plasma spraying the MCrAlY coating onto the superalloy substrate, the coating being characterized as having pores, voids and similar defects, some of which extend to the free surface of the coating, said defects reducing the protectiveness of the coating;

(b) sealing the free surface of the MCrAlY coating by providing a metallic envelope thereover, said envelope spanning and sealing the defects which extend to the free surface of the coating

(c) hot isostatically pressing the coated substrate at a sufficient pressure and temperature and for a sufficient time to close the defects internal of the MCrAlY coating and those intersecting said free surface and to diffuse at least a portion of the metallic envelope into the MCrAlY coating, closure of said defects and diffusion of said metal envelope into the coating significantly enhancing the oxidation-corrosion protective properties of the coating.

Re. 31,340

PROCESS FOR THE PRODUCTION OF POLY (POLYISOCYANATE-POLYOL-ALKALI METAL SILICATE) SOLID

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Original No. 4,273,908, dated Jun. 16, 1981, Ser. No. 146,474, May 5, 1980. Continuation-in-part of Ser. No. 36,350, May 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. Application for reissue Apr. 19, 1982, Ser. No. 369,610

Int. Cl.³ C08K *3/00*

U.S. Cl. 524—650 **23 Claims**

1. The improved process for the production of poly (polyisocyanate-polyol-alkali metal silicate) products by mixing and reacting the following components:

(a) the improvement comprises of producing an emulsion of an alkali metal silicate, which contains only water molecules that are attached to the alkali metal silicate, *in a polyol;*

(b) an organic polyisocyanate or polyisothiocyanate.

Re. 31,341

POLYTETRAFLUOROETHYLENE FINE POWDER AND PROCESS FOR PRODUCING THE SAME

Shun Koizumi, Toyonaka; Shigeru Ichiba, Kyoto; Tetsuo Shimizu, Toyonaka; Chuzo Okuno, Takatsuki; Tosinori Kadowaki, Suita, and Katsutoshi Yamamoto, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Original No. 4,159,370, dated Jun. 26, 1979, Ser. No. 850,539, Nov. 11, 1977. Application for reissue Jun. 25, 1981, Ser. No. 277,391

Claims priority, application Japan, Nov. 11, 1976, 51-135927

Int. Cl.³ C08F *114/26*

U.S. Cl. 526—73 **12 Claims**

1. A polytetrafluoroethylene fine powder which has an average molecular weight of not less than 5,000,000, an amorphous index of not more than 0.1 and a sharp endothermic peak at a temperature between 343° C. and 350° C. on the melting diagram by a differential scanning calorimeter, said sharp peak having an endothermic ratio of not more than 0.3 and a half value width of the endothermic peak of not more than 8 degrees.

6. In a process for producing a polytetrafluoroethylene fine powder, which has an average molecular weight of not less than 5,000,000, an amorphous index of not more than 0.1 and a sharp endothermic peak at a temperature between 343° C. and 350° C. on the melting diagram by a differential scanning calorimeter, said sharp peak having an endothermic ratio of not more than 0.3 and a half value width of the endothermic peak of not more than 8 degrees, the polymerization reaction at a polymerization temperature of 55° to 86° C. using a water-soluble persulfate as the polymerization initiator in a concentration of 0.002% by weight or less, and changing the polymerization condition after the initiation of polymerization and after the polymer in an amount of at least 25% by weight of the final yield is produced but before at most 85% by weight of the final yield of the polymer is produced, said changing of the polymerization condition being carried out by adding either or both of an alkali and a radical scavenger to the polymerization system or by lowering the polymerization temperature 5° to 30° C. said alkali being added in such an amount that the polymerization system is kept on an alkaline side and said radical scavenger being added in an amount of about 2 to 5 times by weight of the amount of the polymerization initiator.

Re. 31,342

PIPERIDYL CARBOXYLATES

Brian Holt, Royton, and Donald R. Randell, Stockport, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

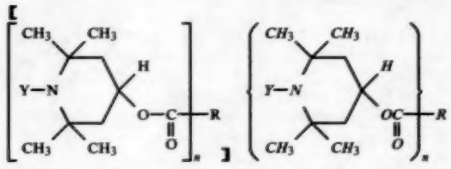
Original No. 4,049,647, dated Sep. 20, 1977, Ser. No. 577,534, May 14, 1975. Division of Ser. No. 310,031, Nov. 28, 1972, abandoned. Application for reissue Sep. 1, 1978, Ser. No. 938,974

Claims priority, application United Kingdom, Nov. 30, 1971, 55487/71; Jun. 17, 1972, 28458/72; Jun. 28, 1972, 35473/72

Int. Cl.[3] C07D *401/12*

U.S. Cl. 542—427 2 Claims

1. A compound having the formula:



wherein [R^I and R^{II} are the same or different and each is a straight or branched alkyl group, having from 1 to 4 carbon atoms, or R^I or R^{II}, together with the carbon atom to which they are each attached form a cycloalkyl group having from 5 to 12 carbon atoms;] Y is [an] alkyl [group, having] *of* from 5 to 20 carbon atoms, alkenyl [having] *of* from *2 to 20 carbon atoms, or aralkyl of from* 7 to 9 carbon atoms, n is *1 or* 2, *and* R, *when n is 1,* is *hydrogen, alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aralkyl of 7 to 14 carbon atoms, 3,5-di-t-butyl-4-hydroxyphenyl, 3,5-di-t-butyl-4-hydroxybenzyl, 2-(3,5-di-t-butyl-4-hydroxyphenyl)ethyl or aryl of 6 to 12 carbon atoms, unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halo or, when n is 2,* alkylene having from 1 to 20 carbon atoms, cycloalkylene having from 5 to 12 carbon atoms, arylene *of 6 to 20 carbon atoms,* vinylene, propenylene, p-xylylene, [the group] $—CH_2CH_2SCH_2CH_2—$ or R is [absent] *a carbon-carbon bond;* [and] *or* a salt thereof selected from phosphate, carbonate, sulfate, chloride, acetate, stearate, maleate, citrate, tertrate, oxalate, benzoate and substituted carbamate.

Re. 31,343

PIPERIDINE DERIVATIVES

Brian Holt, Royton, and Donald R. Randell, Stockport, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

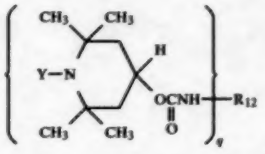
Original No. 4,021,432, dated May 3, 1977, Ser. No. 577,502, May 14, 1975. Continuation of Ser. No. 310,031, Nov. 28, 1972, abandoned. Application for reissue Sep. 1, 1978, Ser. No. 938,849

Claims priority, application United Kingdom, Nov. 30, 1971, 55487/71; Jun. 17, 1972, 28458/72; Jul. 28, 1972, 35473/72

Int. Cl.[3] C07D *401/12*

U.S. Cl. 546—188 9 Claims

1. A compound having the formula:



wherein [R^{III} and R^{IV} are the same or different and each is a straight or branched alkyl group having from 1 to 12 carbon atoms or R^{III} and R^{IV} together with the carbon atom to which they are each attached from a cycloalkyl group having from 5 to 12 carbon atoms,] Y is a straight- or branched alkyl group having from 1 to 12 carbon atoms, an alkenyl group having from 3 to 12 carbon atoms or an aralkyl group having from 7 to 12 carbon atoms and *when q is 1,* R_{12} is hydrogen or *when q is 1 or 2,* R_{12} *is* a saturated or unsaturated hydrocarbyl group containing up to 20 carbon atoms optionally substituted[, Y] *by* halogen or alkoxy having from 1 to 4 carbon atoms and q is *1 or* 2 and a salt thereof selected from a phosphate, carbonate, sulfate, chloride, acetate, stearate, maleate, citrate, [tertrate] *tartrate,* [oxolate] *oxalate,* benzoate and substituted carbamate.

7. A compound according to claim 1 which is 1,6-bis-(4'-carbamoyloxy-1',2',6',6'-pentamethylpiperidine)hexane.

PLANT PATENTS

GRANTED AUGUST 9, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,081

MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Apr. 5, 1982, Ser. No. 365,450
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and decribed, characterized by buds and flowers.

5,082

ROSE PLANT JP-593

G. Peter Ilsink, Doorn, Netherlands, assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Nov. 20, 1981, Ser. No. 323,672
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact, dwarf plant, with mildew resistant foliage, bearing 15 petalled pink, slightly fragrant flowers.

5,083

HYBRID TEA ROSE NAMED YOKO

Takeshi Shirakawa, Gamagori, Japan, assignor to Toshio Nakashima, San Leandro, Calif.

Filed Apr. 22, 1982, Ser. No. 370,611
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct rose plant, substantially as herein shown and described, characterized by the brilliant red color of its very large flowers which are borne on long, strong stems, and its year around abundant production of blooms on long, strong stems.

5,084

JUNIPERUS SCOPULORUM SELECTION

Bruce Usrey, Glendora, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.

Filed Sep. 15, 1981, Ser. No. 302,638
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—50 1 Claim

1. A new and distinct selection of *Juniperus scopulorum* as substantially shown and described, a selection characterized by a unique combination of a prostrate decumbent growth habit, foliage which adheres closer to the stem and higher rooting percentages.

PATENTS

GRANTED AUG. 9, 1983

ERRATA

For CLASS	See PATENT NO.
431–185	4,397,295
405–033	4,397,578
204–098	4,397,735
427–162	4,397,923
521–082	4,397,948
525–426	4,398,009
377–020	4,398,085
382–027	4,398,176
382–018	4,398,177
328–150	4,398,218
382–041	4,398,256
361–220	4,398,277

PATENTS

GRANTED AUGUST 9, 1983

GENERAL AND MECHANICAL

4,397,043

IMPACT-PROTECTIVE SUIT FOR RACQUETBALL

James C. Croteau, 4506 Morrison St., Niagara Falls, Ontario, Canada

Filed Sep. 10, 1981, Ser. No. 300,717
Claims priority, application Canada, Sep. 12, 1980, 360143
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **3 Claims**

1. An impact-protective suit for racquetball that enables the wearer to play aggressively, that permits free, unrestricted movement during play, and that readily vents body heat, said suit comprising a shirt portion and a pants portion, said portions being made of an outer material, a lining, and a selectively located impact-protective material, intermediate said outer material and said lining; said impact-protective material completely covering only the back side of said wearer so as to protect said wearer against injury resulting from impact to said back side, thus enabling said wearer to play aggressively; the front side of said wearer thereby being uncovered by said impact-protective material so as to permit free, unrestricted movement during play and ready venting of body heat.

4,397,044

PROTECTIVE BONNET FOR BEEKEEPERS

Gaston Trepanier, 676 Rang Saint-Antoine, St. Sophie de Leyrard, County of Lothiniere, Canada G0X 3C0

Filed Jun. 29, 1981, Ser. No. 279,662
Int. Cl.³ A42B *3/00, 5/00*
U.S. Cl. 2—4 **1 Claim**

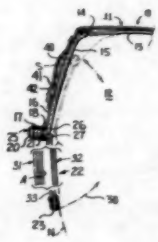
1. A protection veil adapted for use with a hat of the type having a central crown portion surrounded by a peripheral flange, said veil comprising an annular upper portion adapted to engage onto the peripheral flange of the hat, an intermediate portion adapted to depend downwardly from said peripheral flange all around the same, and a lower portion depending from said intermediate portion, said upper portion defining a central aperture to allow passage of said crown portion, a first tightening means provided all around said central aperture to tighten said upper portion against said crown portion, said intermediate portion having an inverted frusto-conical shape with its larger diameter base edge attached to the radially outer edge of said top portion and its smaller diameter base edge attached to the top edge of said lower portion, said intermediate portion defining a window opening at the front of the veil adapted to be aligned with the eyes of the wearer, said intermediate portion consisting of a band, the ends of which are disposed at the front of said veil and define the sides of said window opening, said band being widest at said ends and narrowest at its central portion which is located at the back of said veil, a transparent plastic panel removably closing said window opening, a self-adhesive strip removably securing the edges of said panel to the edges of said window opening, said plastic panel facing downwardly, said lower portion adapted to cover the neck and the bust of the wearer and including a front flap and a rear flap defining arm-holes therebetween, second tightening means provided all along the edges of said arm-holes and all along the bottom edges of said front and rear flaps and across said arm-holes, said lower portion having an opening closable by a slide fastener located below said window opening in the mouth area of said wearer said veil being made of a non-metallic and flexible screen material.

4,397,045

LINER FOR FIRE HELMET OR THE LIKE

Sarah Schonwetter, and Steven B. Schonwetter, both of 585 Warren Ave., Kingston, Pa. 18704

Filed Nov. 3, 1980, Ser. No. 203,378
Int. Cl.³ A42B *1/06, 3/00*
U.S. Cl. 2—5 **9 Claims**



1. A helmet liner particularly adapted for use in high temperature environments comprising a crown defining a generally concave interior adapted to receive the head of a wearer, said crown including a bottom terminal peripheral edge portion, a neck and ear covering and protecting flap disposed along said bottom terminal peripheral edge portion, a sewn seam defined in part by said bottom terminal peripheral edge portion and an upper terminal peripheral edge portion of said neck and ear covering and protecting flap, said seam being constructed and arranged for relatively folding said neck and ear covering and protecting flap from a position generally wholly interiorly of said crown to a position generally wholly exteriorly of said crown, said neck and ear covering and protecting flap being of a generally downwardly and inwardly converging relationship when disposed exteriorly of said crown whereby the neck and ears of a wearer of the liner are intimately covered whereas when disposed interior of said crown said ear covering and protecting flap conforms generally to the configuration of said crown and confortably receives the head of a wearer, said ear covering and protecting flap being constructed from at least two plies of material, at least one of said plies of material being fire resistant/retardant and heat reflective material, the other of said plies of material being fire resistant/retardant but non-

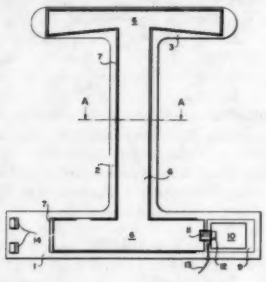
heat reflective material, said at least one ply being positioned outermost when said neck and ear covering and protecting flap is disposed exteriorly of said crown, and said crown being constructed from non-heat reflective material.

4,397,046

PROTECTING DEVICE ESPECIALLY FOR MOTOR-CYCLISTS

Michel Steiner, Geneva, Switzerland, assignor to Lacoray S.A., Geneva, Switzerland

Filed Jun. 29, 1981, Ser. No. 278,465
Int. Cl.³ A61F 5/02
U.S. Cl. 2—44 19 Claims



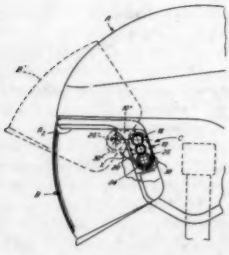
1. Protecting device especially for motor-cyclists comprising at least a tight chamber which is provided with automatically releasable inflating means and is presenting fixing means intended for cooperating in service position with the body of the user and in such a manner that said chamber is disposed at least along the vertebral column and the nape of said user.

4,397,047

DEVICE FOR THE CONTROLLED LIFTING OF HELMET VISORS AND THE LIKE

Pier L. Nava, Verderio Superiore (Como), Italy

Filed Jul. 8, 1981, Ser. No. 281,696
Claims priority, application Italy, Jul. 11, 1980, 23410 A/80
Int. Cl.³ A42B 3/02; A61F 9/00
U.S. Cl. 2—424 9 Claims



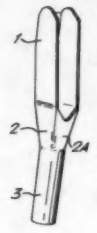
1. Device to effect controlled lifting of the visors of helmets and similar headgear, in particular in-built visors, comprising a pair of gear and pinion assemblies to connect movably the ends of a visor to a helmet and actuating means in at least one of the elements of the pair of gear and pinions assemblies, operatively securable to the helmet and visor, to impart to the visor a complementary oscillation during its lifting in order to set it closer to the helmet outer surface.

4,397,048

REINFORCED PLASTICS ARTIFICIAL LIMB COMPONENT AND METHOD FOR MAKING SAME

Eric Brown, Wantage, and Neil L. Hancox, Goosey, both of England, assignors to Chas. A. Blatchford & Sons Limited, Hampshire, England

Filed Sep. 21, 1981, Ser. No. 303,860
Claims priority, application United Kingdom, Sep. 26, 1980, 8031119
Int. Cl.³ A61F 1/08; B29C 17/06, 27/26; B29D 3/02
U.S. Cl. 3—2 11 Claims



1. A lightweight, load-bearing shin component for an artificial leg, the component comprising an elongate upper portion of open channel shape in cross section, an elongate lower portion of closed tubular cross section, and an intermediate hollow portion joining the upper portion to the lower portion, the component being molded from a plurality of sheets of plastics material, at least two of the sheets having reinforcement fibers, the reinforcement fibers of at least one of the said at least two sheets running at a predetermined non-zero angle to reinforcement fibers of at least one other of the said at least two sheets said intermediate hollow portion being a transition portion between two portions of said component both having different configurations, in cross-section, from each other.

4,397,049

HYDRAULICALLY ACTUATED CARDIAC PROSTHESIS WITH THREE-WAY VENTRICULAR VALVING

Thomas C. Robinson, and Sotiris Kitrilakis, both of Berkeley, Calif., assignors to Foxcroft Associates, San Antonio, Tex.

Filed Sep. 15, 1981, Ser. No. 302,597
Int. Cl.³ A61F 1/24; A61M 1/03
U.S. Cl. 3—1.7 28 Claims

1. An implantable hydraulically actuated total cardiac prosthesis comprising:

a pair of blood pumping chambers each having a blood inlet, a blood outlet and a flexible portion;

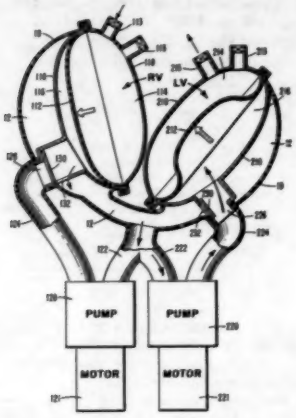
a pair of actuation chambers each adapted to contain actuation fluid, one of said actuation chambers being operatively associated with one of said blood pumping chambers and the other of said actuation chambers being operatively associated with the other of said blood pumping chambers to cause displacement of the flexible portion of said blood pumping chambers in response to changes in volume of actuation fluid in their associated actuation chambers;

an actuation fluid reservoir;

actuation fluid pumping means separate from and in fluid communication with said reservoir for pumping actuation fluid therefrom; and

a separate three-way valve means associated with each of said actuation chambers, each of said valve means being in fluid communication with its associated actuation chamber, said pumping means and said reservoir, and being adapted to alternately and repetitively direct actuation fluid from said pumping means to its associated actuation chamber and then from its associated actuation chamber to said reservoir;

said reservoir comprising a separate compliant zone associated with each of said actuation chambers, defined at least in part by a flexible wall portion made from biocompatible



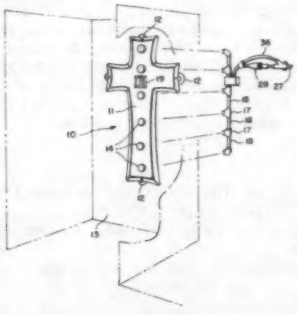
elastomeric material, said compliant zones communicating with each other, said pumping means and said valve means by flexible ducting.

4,397,050

QUICK SHOWER OR POWER SHOWER

Clifford E. S. Davis, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Feb. 2, 1981, Ser. No. 230,670
Int. Cl.³ A47K *3/22*
U.S. Cl. 4—601 **3 Claims**



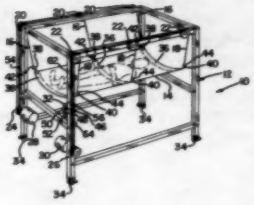
1. A quick pulsating shower device, comprising in combination a panel mounted on a wall, a row of spray heads and a soap dispenser on said panel connected by a hose to a water supply, said hose being intercepted upstream by a pulsator, wherein said soap dispenser includes a syphon hose drawing liquid soap into water moving to said spray heads wherein said pulsator comprises water driven roller means rotatably mounted about an axis at right angles to the conduit axis and having peripheral vanes responsive to water flow in said conduit to cause rotation of said roller means, said roller means further having in combination an orifice through said means causing pulsating intermittant flow through said conduit.

4,397,051

APPARATUS FOR LIFTING A HUMAN BEING

Herbert O. Wheeler, Lawrenceville, Ill., assignor to Helen S. Ballas, Newton Falls, Ohio, a part interest

Filed Apr. 30, 1981, Ser. No. 259,043
Int. Cl.³ A61G *7/10*
U.S. Cl. 5—84 **6 Claims**



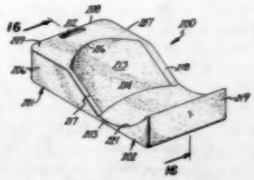
1. An apparatus useful for lifting a human being from a surface, comprising stretcher means adapted to be placed between said human being and said surface, said stretcher means having substantially opposing first and second side ends and being capable of supporting said human being; first motive means comprising a first electric motor and a plurality of first cables associated with said first side end of said stretcher means, the operation of said first electric motor causing movement in said first cables and, in turn, the lifting or lowering of said first side end of said stretcher means, as desired; second motive means comprising a second electric motor and a plurality of second cables removably associated with said second side end of said stretcher means, the operation of said second electric motor causing movement in said second cables and, in turn, the lifting or lowering of said second side end of said stretcher means, as desired, provided that said first and second motive means are capable of independent operation; frame means acting to support said stretcher means and said first and second motive means; first and second switch means associated with said frame means and in electrical communication with said first and second motive means, respectively; and a first and a second contact block located on one of said first and second cables, respectively, and being capable of independently contacting said first and second switch means in response to the operation of said first and second electric motor respectively, whereby said contacting acts to deactivate said first and second electric motors and said movement of said first and second side end, respectively, of said stretcher means.

4,397,052

PRENATAL SUPPORT PILLOW

Richard G. Lund, III, 7564 Major Ave. North, Brooklyn Park, Minn. 55443

Filed Dec. 15, 1980, Ser. No. 216,769
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—431 **22 Claims**



1. A support for the abdomen of a person resting in a side position comprising: body means of compressible elastic material for supporting the abdomen of a person lying in a side position on supporting means, said body means having first

means adapted to engage the supporting means, and second means including an upwardly and outwardly directed concave curved pocket, said pocket being of a size to accommodate a lower portion of the abdomen when the person is resting in a side position whereby said body means of compressible elastic material yieldably supports the abdomen in its normal generally central position relative to the body of the person, back engaging means spaced from the body means for holding the body means in engagement with the abdomen, and means connecting the back engaging means to the body means said means connecting the back engaging means to the body means including releasable fastener means holding the back engaging means and body means in selected positions relative to each other thereby allowing the locations of the back engaging means and body means to be changed to accommodate varying abdomen sizes.

4,397,053

FOAM MATERIAL BODY FOR A MATTRESS, AND ELEMENT OF FURNITURE PROVIDED WITH SAME

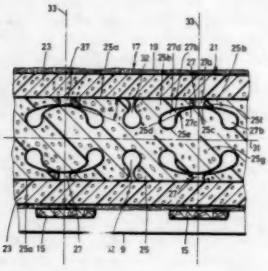
Hansruedi Fanti, Flüh, Switzerland, assignor to Matra AG, Flüh, Switzerland

Filed Sep. 19, 1980, Ser. No. 188,595

Claims priority, application Switzerland, Sep. 20, 1979, 8481/79

Int. Cl.³ A47C 27/15

U.S. Cl. 5—481 **21 Claims**



1. A foam material body for a mattress, comprising an elongated core member having a length, a width, a thickness and two supporting surfaces spaced from one another in direction of the thickness, said core member having a plurality of recesses provided in each of said supporting surfaces, said recesses being spaced from one another in direction of the length of said core member and each extending in direction of the width of the latter, each of said recesses having an initial recess portion which is open at a respective one of said supporting surfaces and extends from the latter inwardly in direction of the thickness of said core member, two deeper recess portions spaced from said initial portion inwardly substantially in the direction of the thickness of said core member and also spaced away of one another in direction of the length of said core member and together with a respective one of said supporting faces forming a pair of lips which have ends facing toward one another and bounding a free spaced defined by said initial recess portion, and two narrow recess portions each connecting said initial recess portion with a respective one of said deeper recess portions, each of said recesses having a depth, as measured from a respective one of said supporting surfaces in direction of the thickness of said core member, which is smaller than half the thickness of said core member.

4,397,054

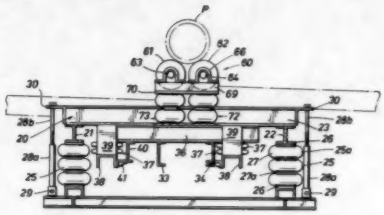
APPARATUS FOR HANDLING PIPE TO EFFECT HIGH SPEED MACHINING OPERATIONS

Roy Lee, Jr., 10134 Briar Dr., Houston, Tex. 77042

Filed Apr. 24, 1981, Ser. No. 257,185

Int. Cl.³ B23G 1/22, 1/52, 11/00

U.S. Cl. 10—107 PH **2 Claims**



1. Apparatus for moving a pipe joint from an upstream pipe rack into position to be threaded, or otherwise machined adjacent its end, for supporting the pipe joint while it is rotated at a surface cutting speed of over 350 feet per minute during the machining operation, and for moving the machined pipe joint to a down-stream pipe rack, said apparatus comprising a base, an elongated main frame positioned with its longitudinal axis in vertical alignment with the machine and between an upstream conveyor means mounted on the main frame for moving the pipe axially, to said downstream pipe rack, pipe transfer means mounted on the main frame for transferring a pipe from the upstream pipe rack to the conveyor means when the main frame is moved from a down position to a raised position to locate the conveyor means for the longitudinal axis of a pipe on the conveyor to be properly positioned horizontally for movement by the conveyor means into position to be machined, a plurality of steady rests mounted on the main frame including idler wheels for supporting the pipe for rotation, means for moving the steady rests between a down position to a raised position to support the pipe for rotation during the machining operation, said means for moving the steady rests between said positions comprising air cylinders having curved flexible walls of resilient material to allow lateral movement of each steady rest as required to maintain contact with the rotating pipe, and a pair of hold-down wheels for engaging the pipe above its horizontal centerline adjacent each steady rest to hold the pipe in engagement with the steady rests and means for moving the hold-down wheels out of engagement with the pipe when the steady rests are moved to their down positions.

4,397,055

REVERSABLE SHAFT WITH ROTARY AND SELECTIVE OSCILLATING MOTION

Samuel M. Cuchiara, 18609 LaGuardia, Rowland Heights, Calif. 91748

Filed Oct. 20, 1980, Ser. No. 198,608

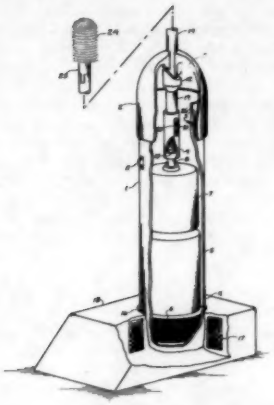
Int. Cl.³ A46B 13/02

U.S. Cl. 15—22 R **3 Claims**

1. An electrically powered toothbrush comprising:
a tubular housing having a forward end;
an electrical battery within said housing;
an electrical motor with a motor shaft axially disposed within said housing and energized by said battery;
an electrical switch on said housing for controlling said motor;
an end cap, slidably attached to and enclosing said forward end, having a rearwardly projecting shaft guide with a helical shaped cam surface on it's most rearward end;
a brush holder shaft traversably projecting forwardly through said end cap and slidably engaged to a coupling means, wherein said means is axially attached to said motor shaft;

a compression spring within said means which forceably presses said shaft forwardly;

and an axial cam on said brush holder shaft, located approximately near the cam surface, having a cam mating surface codependent with and simular to said cam surface;



whereby rotation of said brush holder shaft rotates said cam mating surface upon the said cam surface thereby causing axial displacement of said brush holder shaft.

4,397,056

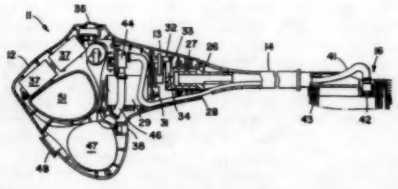
POWER ASSISTED TOILET BRUSH

Albert J. Miller, Campbell, Calif., assignor to Atlas Electronics International, Inc., Santa Clara, Calif.

Filed Nov. 12, 1981, Ser. No. 320,659

Int. Cl.³ A46B *13/04*

U.S. Cl. 15—22 R **9 Claims**



1. A power assisted cleaning device, comprising a portable housing, a stem assembly joined to said housing in freely reciprocating fashion, a cleaning brush secured to the distal end of said stem assembly, motor means disposed in said housing for driving said stem assembly in reciprocating rotary motion, a spray jet disposed adjacent to said brush, liquid reservoir means in said housing for holding a cleaning solution therein, pump means in said housing and connected between said reservoir and said spray jet for pumping liquid cleaning solution to said spray jet, rechargable battery means disposed within said housing for energizing said pump means and said motor means, wall bracket means for supporting said device, said bracket means including recharging means for recharging said battery means, said wall bracket means including a wall-mounted bracket having a tapered slot extending generally vertically therethrough and adapted to receive a like tapered portion of said portable housing therein, said stem assembly extending downwardly therethrough in suspended fashion, said wall mounted bracket including electrical contacts projecting therefrom and disposed to contact recharging contacts on the exterior of said portable housing.

4,397,057

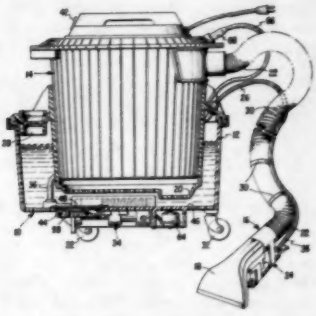
APPARATUS FOR CLEANING CARPETS AND THE LIKE

Martin E. Harbeck, Anderson, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 11, 1981, Ser. No. 301,081

Int. Cl.³ A47L *11/34*

U.S. Cl. 15—321 **6 Claims**



1. Home or residential cleaning apparatus of the hot water or steam extraction type for carpets, other floor coverings, upholstery, and the like, comprising a hot solution tank for containing a heated cleaning solution, pump means for pumping the hot cleaning solution to an applicator nozzle, wet pick-up vacuum means for extracting soiled cleaning solution and heating means at the bottom of said solution tank for heating the cleaning solution, said heating means comprising electrical resistance heater means of relatively low wattage sufficient to maintain the cleaning solution in a heated condition so that the energy requirements of the apparatus are maintained at a relatively modest level, a thermostat thermally coupled to the said heater and in series electrical connection therewith, said thermostat being set to open at a temperature slightly above the boiling point of the cleaning solution so that said thermostat may function as a safety device, disconnecting flow of electrical power to the heater when said solution tank is emptied, and said solution pump is also coupled with said thermostat, in parallel with said heater so that, upon the solution tank being emptied, the solution pump will also be disconnected.

4,397,058

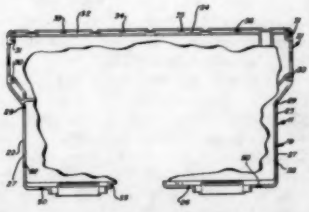
FURNITURE GUARD AND BEARING PAD FOR VACUUM CLEANER NOZZLE

David G. Koland, Sandstone Township, Pine County, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 13, 1981, Ser. No. 310,375

Int. Cl.³ A47L *9/00*

U.S. Cl. 15—325 **18 Claims**



6. In a vacuum cleaner nozzle having a base member, a cover defining a peripheral wall and being mounted to the base member, a pair of bearings, and a beater brush having a support

rotatably journaled in said bearings, the improvement comprising:

a bumper;

mounting means for mounting the bumper to said cover peripheral wall to define a peripheral furniture guard thereon, said mounting means

comprising a plurality of T-section connectors carried by the bumper at positions spaced along the length thereof, each connector having a stem portion and a head portion, and means on said peripheral wall defining slots opening through said edge portion of a connector with the head portion thereof disposed inwardly of the wall to releasably retain the bumper outwardly on the wall; and

resilient means carried by the bumper extending between said nozzle cover and bearings defining resilient bearing pad means.

4,397,059

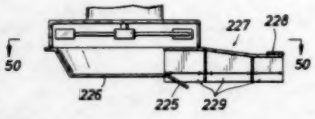
VACUUM CLEANER ATTACHMENT FOR ROTARY LAWNMOWERS

Allen A. Chernosky, 4015 Turnberry, Houston, Tex. 77025

Division of Ser. No. 3,284, Jan. 15, 1979, Pat. No. 4,306,331, which is a continuation-in-part of Ser. No. 680,486, Apr. 26, 1976, abandoned, which is a division of Ser. No. 499,830, Aug. 23, 1974, Pat. No. 3,995,348. This application Aug. 17, 1981, Ser. No. 293,593

Int. Cl.³ A47L *9/00*

U.S. Cl. 15—328 **4 Claims**



1. A removable attachment for converting a rotary mower to a vacuum cleaner for picking up debris on sidewalks, driveways, and the like, where the mower has a propeller-type grass-cutting blade rotating in a housing having a discharge port and an opening in the bottom thereof through which grass normally extends to be cut by the rotating blade, said attachment comprising a baffle member extending across the opening in the housing, said baffle member including a bottom plate spaced below the housing and a sidewall supporting the bottom plate below the housing, an opening in the bottom plate and the sidewall through which debris can be moved into the housing by air pulled through the opening by the rotating blade of the mower, and means for releasably attaching the baffle member to the housing to restrict the flow of air between the member and the housing sufficiently to cause most of the air pulled into the housing by the blade to flow through the opening.

4,397,060

VACUUM CLEANER TOOL FOR USE ON HORIZONTAL AND VERTICAL SURFACES

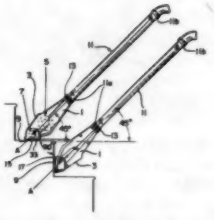
Danny R. Jinkins, Bel Air; William R. Lessig, III, Cockeysville, and Timothy J. Canatella, Baltimore, all of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 26, 1981, Ser. No. 247,826

Int. Cl.³ A47L *9/04*

U.S. Cl. 15—377 **3 Claims**

1. A vacuum cleaner tool for use on horizontal and vertical work surfaces, said tool being intended for use with a vacuum cleaner having a portion including an elongated wand controlled by the operator, said tool comprising a housing including an agitator housing portion having a substantially planar opening formed therein, an agitator means rotatably journaled in the agitator housing and protruding below the opening therein, an air turbine having a shaft rotatably journaled in the housing about an axis substantially parallel to the axis of the agitator means, a transverse wall in the housing laterally of the air turbine, the shaft having a portion extending beyond the transverse wall, a driving pulley on the extending portion of the shaft, a driven pulley on the agitator means, a belt between the pulleys, thereby driving the agitator means from the air turbine, an air inlet means including an aperture formed between the housing and the agitator housing, the housing having a substantially open bottom portion, a cover plate removably secured to the open bottom portion of the housing, the cover plate having an upstanding channel-shaped ramp radially overlying a portion of the air turbine and spaced therefrom, the ramp having a forward portion in communication with the aperture between the housing and the agitator housing, whereby air drawn in through the planar opening in the agitator housing passes through the aperture and enters into the housing and is directed by the ramp for powering the air turbine, means for mounting the housing on the vacuum cleaner portion about an axis which is disposed substantially at 45 degrees with respect to the plane of the opening in the agitator housing, the housing having a first position with respect to the vacuum cleaner portion wherein the opening in the agitator housing is disposed in a substantially horizontal plane, thereby facilitating the cleaning of a horizontal work surface, and the mounting means including means for rotating the housing and its agitator housing portion substantially 180 degrees with respect to the vacuum cleaner portion and from the first position into a second position, wherein the opening in the agitator housing is disposed in a substantially vertical plane, thereby facilitating the cleaning of a vertical work surface without requiring the operator to change the orientation of the vacuum cleaner portion with respect to the work surface, said means for rotating including a swivel member between the wand and the housing, the swivel member being carried by the housing and having an external annular notch formed therein, wherein the housing has a pair of parallel internal annular flanges received within the notch, and the vacuum cleaner portion and the housing having respective axes which are substantially alined with one another and with the axis of the mounting means, whereby the tool is substantially balanced in both of its positions.



4,397,061

GROMMET FOR SETTING IN SHEET MATERIAL

Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,165

Claims priority, application Japan, Feb. 29, 1980, 55-26893[U]

Int. Cl.³ A43C *5/00*

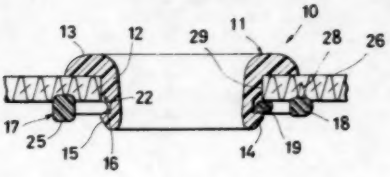
U.S. Cl. 16—2 **8 Claims**

1. A grommet for setting in sheet material, comprising:

(a) an eyelet of rigid plastic material including a barrel having an annular retaining flange at one end of the barrel, an annular locking flange disposed at an opposite end of the barrel, an annular recess adjacent said locking flange, and a barrel portion between said annular recess and said retaining flange, said annular locking flange having an outside diameter which is the same as or smaller than that of said barrel portion; and

(b) a washer of rigid plastic material including an annular rib

and a plurality of locking tongues projecting radially inwardly from said annular rib, said locking tongues of said washer jointly defining an interrupted circular edge having a diameter smaller than said outside diameter of



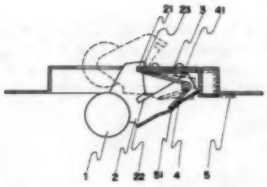
said locking flange, said locking tongues being snappable over said locking flange into said annular recess at a position between the sheet material and said locking flange to retain said eyelet in said sheet material said locking tongues having slots therein.

4,397,062

RETRACTABLE ROLLER ASSEMBLY

Jinn T. Huang, P.O. No. 360, Changhua, Taiwan

Filed Feb. 3, 1981, Ser. No. 231,474
Int. Cl.³ B60B *33/06*
U.S. Cl. 16—33 **10 Claims**



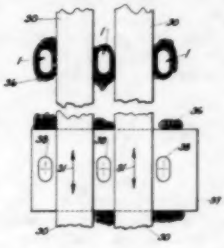
1. A retractable roller assembly comprising in combination:
a roller;
a housing for said roller;
roller support means having one end pivotably connected to said housing and means mounting said roller for rotatable movement to the other end of said roller support means, said roller support means being pivotable between a first retracted position wherein said roller is housed within said housing and a second extended position wherein said roller is extended at least partially beyond said housing for rolling engagement with a surface;
first means defining a first notch in said support means for establishing said first position;
second means vertically separated from said first means defining a second notch in said support means and for establishing said second position; and
locking means slideably mounted to said housing for reciprocal rectilinear sliding movement into and out of locking engagement with said first and second notches, said locking means for (a) releasably locking said support means in said first position by being slideably moved into engagement with said first notch when said first notch is moved into registry with said locking means by virtue of the pivotal movement of said support means, (b) releasably locking said support means in said second position by being slideably moved into engagement with said second notch when said second notch is moved into registry with said locking means by virtue of said pivotal movement of said support means, and (c) permitting said support means to be freely pivotable between said first and second positions by being slideably moved out of said locking engagement with either of said first or second notches.

4,397,063

METHOD FOR RESTRAINING TRANSVERSE MOVEMENT OF THE LOWER EDGES OF VERTICALLY HUNG SLIDING DOORS

Robert L. Schneider, 1876 Fireside Dr., Cincinnati, Ohio 45230

Filed Dec. 8, 1980, Ser. No. 213,857
Int. Cl.³ E05D *13/02*
U.S. Cl. 16—90 **3 Claims**



1. A method for guiding the lower side edges of a pair of vertically hung horizontally spaced doors supported for sliding movement in directions generally parallel to the plane of the doors to prevent excessive movement of the lower side edges in directions transverse to their direction of travel, said method comprising, providing at selected locations adjacent the inner and outer lower side edges of the doors a nail-like guide pin having a lower end configured to be forcibly driven into and fixedly secured to the floor and an upper end bearing an enlarged portion having surfaces for slidingly engaging the lower side edges of the door, forcibly driving into the floor adjacent the lower side edges of the door said nail-like guide pin, said upper end of said nail-like guide pin having a vertical height less than the distance between said floor and a lower bottom edge of said door such that said door may be pivoted sideways to clear the pin and enable other pins to be driven into the floor, and securing to the upper end of the pin after it has been driven into the floor a cap comprising said enlarged portion having outer surfaces configured to slidingly abut a lower side edge surface of the associated door, said cap being removable to enable removal of the doors.

4,397,064

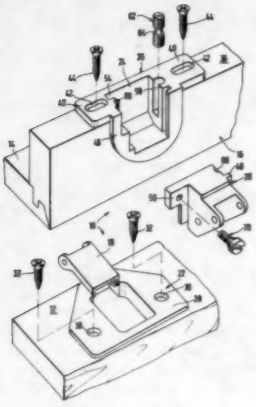
CABINET HINGE

Horst Lautenschläger, Reinheim, and Gerhard W. Lautenschläger, Brensbach-Wersau, both of Fed. Rep. of Germany, assignors to Mepla, Inc., High Point, N.C.

Filed Jul. 8, 1981, Ser. No. 281,307
Int. Cl.³ E05D *7/04, 5/02*
U.S. Cl. 16—379 **12 Claims**

1. For use in a cabinet having a box-like carcass with carcass walls, and having an open side narrowed by a frame formed by strip-like frame members projecting each at right angles from one of the carcass walls toward an opposite carcass wall, at least one recess in one of the frame members, said carcass being open from front to back of the frame member and cut from the free front face of the frame member in the direction of the adjacent carcass wall: a hinge for pivotally mounting a door leaf to said cabinet, said hinge comprising: a door-leaf-related hinge part fastenable sunkenly in an opening in the back of the door leaf, a frame-related hinge part, and a link mechanism pivotingly coupling said hinge parts, said frame-related hinge part having a mounting piece to be fitted and mounted into the frame member recess, and a block joined by said link mechanism to said door-leaf-related hinge part and to be displaceably disposed in the recess parallel to the front side of the frame and at right angles to the end face of the frame member, slot and key joints provided between confronting lateral defining sur-

faces of said block and said mounting piece, whereby said block is guided for longitudinal displacement in the mounting piece, and a screw element joining said block to the mounting part, said element having a threaded shank in engagement with a counter-thread in said block and held in said mounting piece rotatably, but nondisplaceably in the longitudinal direction of said shank, said screw element being a threaded spindle disposed in a bore formed partially in said block and partially in said mounting piece and laid across the plane of separation between the lateral defining surface of the block and said confronting defining surface of said mounting piece, a circumferential groove interrupting the thread of the threaded shank of the spindle, and a projection protruding from a plain bore portion formed in said mounting piece and engaging said groove, and a bore portion in said block and provided with a counter-thread complementary to the thread of the threaded spindle.

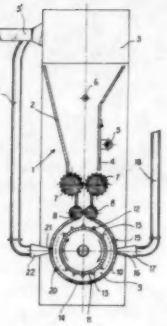


4,397,065
SELF REGULATED APPARATUS FOR FEEDING CARDING MACHINES

Guido Bettoni, via Mazzini 1, Erbusco (Brescia), and Cesare Bettoni, via Lazzaretto 54, Adro (Brescia), both of Italy

Filed May 12, 1981, Ser. No. 262,894
Int. Cl.³ D01G 9/00
U.S. Cl. 19—80 R **11 Claims**

1. A self-regulating system for the preparation of wads for feeding to carding machines, said apparatus comprising a preparatory unit for the fiber and at least one unit for the production of wad mattresses for feeding to an equal number of carding machines, said preparatory unit being connected to each of said wad production units through a first conduit with a fan-aspirator for the transportation of the material, characterized in that said preparatory unit comprises a hopper container on the upper part of which there is mounted a condenser for sending said material to said container; first and second pairs of rollers for retrieving the material from the bottom of said container and transporting it to a chamber defined by a cylindrical body; and a beater-drum rotatable within said chamber and having a plurality of tips for the opening and reduction of the material into smaller bits; and further characterized in that connected to said chamber are first aspiration inlets of said first conduit for the retrieval of said material from said chamber and second aspiration inlets of second conduit means connected only to said preparatory unit for the recycling of excess material which is not retrieved by said first conduit means; said second conduit means being connected to the inlet of said condenser for regulating an amount of material in said chamber.



4,397,066
Patent Not Issued For This Number

4,397,067
SAFETY EARNUT

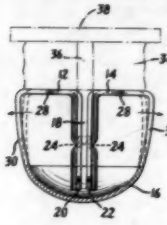
Christopher S. Rapseik, Patterson, N.Y., assignor to Avon Products, Inc., New York, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,320
Int. Cl.³ A44C 7/00
U.S. Cl. 24—108 **4 Claims**

1. An earnut for use with earrings of the type having a post adapted to pass through the user's earlobe with a portion of the post extending a distance beyond the posterior surface of the earlobe when the earring is worn, said earnut comprising:

a housing including means defining a passage having entry thereto at one side of said housing for receiving said extending portion of said post and holding same with flexibly yieldable embrace, said housing further including a shield defining a housing side opposite said one side and

remotely distant from the entry to said passage, said shield being disposed transversely to the axis of said passage, said passage defining means comprising a pair of confronting elongate fingers each having a longitudinally extending groove alignedly facing a like groove in the other, and connector means for connecting said fingers from positions adjacent the entry to said passage to said shield



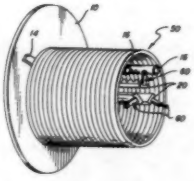
whereby said fingers can move away from and toward each other upon entry and removal, respectively, of said post portion from therebetween, said connector means comprising a tab piece having a first portion connected with its associated finger adjacent the entry to said passage and extending radially therefrom a distance, and a second integral portion extending codirectional with said passage and connected to said shield.

4,397,068

APPARATUS AND METHOD FOR SECURING TUBE SUPPORTS IN A COIL BUNDLE

Daniel J. Yarnold, Memphis, Tenn., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,688
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.4 **12 Claims**



1. Apparatus for forming a secured heat exchanger from a coil bundle of unsecured loops and a tube sheet having loop securing portions which comprises:

a base defining at least one elongated slot;

mounting means extending from the base adapted to receive the coil bundle and located to maintain the coil bundle in a position wherein the slot defined by the base is within a cylinder defined by the coil bundle;

a carriage including guide means mounted for reciprocating movement within the slot;

a support arm fastened to extend from the carriage, said support arm including means for attaching the tube sheet thereto; and

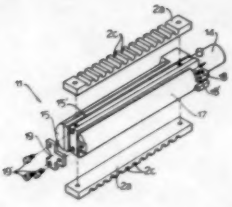
motive means for displacing the carriage and the attached support arm from a first position where the tube sheet may be attached to the support arm to a second position where the tube sheet engages the coil bundle securing the coil loops in the desired position.

4,397,069

DEVICE AND PROCESS FOR THE MANUFACTURE OF VIBRATION-DAMPING AND SHOCKPROOF MOUNTINGS INCORPORATING AT LEAST ONE HELICALLY ARRANGED METAL CABLE AND MOUNTING THEREBY OBTAINED

Carlo Camossi, Via C. Bartoli, 22, 28024 - Gozzano (Novara), Italy

Filed Jun. 13, 1980, Ser. No. 159,195
Claims priority, application Italy, Jun. 20, 1979, 23722 A/79
Int. Cl.³ B21F *35/00*; **B23P** *13/00*
U.S. Cl. 29—173 **4 Claims**



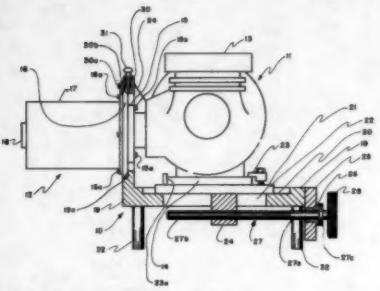
1. A device for forming a vibration-damping and shockproof element having at least one helical coil made from a multi-strand wire cable, said device comprising rotary generating means for rotatably powering adjustable mandrel means, said mandrel means including first and second juxtaposed parallel longitudinal elements having a substantially semicylindrical configuration, said first longitudinal element being substantially stationary and said second longitudinal element being movable with respect to said first element to vary the radius of curvature of said mandrel means, said first longitudinal element including a pair of opposed parallel planar zone means for releasably securing a portion of said vibration damping and shockproof element during the formation of said coil; said pair of opposed parallel planar zone means comprising a pair of substantially flap planar strips oriented parallel to the longitudinal axis of said first element including a plurality of threaded holes positioned to correspond to threaded holes in said portion of said vibration-damping and shockproof element and said portion of said vibration-damping and shockproof element comprising a pair of longitudinal bars having on the face thereof opposite said mandrel means a plurality of semicylindrical seats for receiving said cable; releasable spacer means for movably separating said second longitudinal element from said first longitudinal element and maintaining said first and second longitudinal elements in spaced relationship, said spacer means being variably adjustable to move said movable second longitudinal element with respect to said stationary first longitudinal element to vary the radius of curvature of said mandrel means, thereby varying the diameter of said helical coil formed on said mandrel means, and said spacer means being releasable to cause said second longitudinal element to move toward said first longitudinal element resulting in said mandrel means having a smaller diameter than said coil so that said vibration damping and shockproof element can be easily removed from said mandrel means; cam means cooperating with said spacer means for movably maintaining said movable second longitudinal element in spaced apart relationship to said stationary first longitudinal element to adjust the tension of said coil being formed, wherein said cam means operates to displace said movable second longitudinal element parallel to its own axis and includes a slot having a generally reverse L-shaped configuration and a pin guided for movement by the configuration of said slot to change the position of said stationary longitudinal element; clamp means mounted on said mandrel means for securing one end of said cable during the formation of said helical coil, and cable feed means for controllably feeding said cable under tension to said mandrel means.

4,397,070

CRYOGENIC COOLER PULLER

Buford T. Walters, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 26, 1982, Ser. No. 362,418
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—256 1 Claim



1. A tool for extracting a cryogenic cooler from a dewer-detector wherein said cooler has at least a housing and a cold finger flange on said housing, and said dewer-detector includes a mounting flange with a bore therethrough and with a dewer mounted on said flange, wherein said cold finger flange is mounted in said bore and attached by set screws to said dewer, said tool including:

a base plate having a rectangular longitudinal trough therein, a generally rectangular slot through the bottom of said trough, an arcuate cut-out shaped like a portion of said mounting flange;

two side plates mounted orthogonally on opposite sides of said base plate and parallel to each other and each having a slot on their facing sides adjacent to said cut-out;

a slide plate mounted in said trough and having a screw nut extending through said slot and having retaining clamps on the side opposite said screw nut;

an end plate secured to said base plate on the end opposite said cut-out and with a bore therethrough;

a lead screw having a threaded portion and an unthreaded portion with said threaded portion screwed into said screw nut and with said unthreaded portion extending through said bore of said end plate;

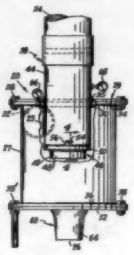
a drop plate having a cut-out therein corresponding to the shape of said mounting flange and having a tongue on each side adapted to fit into said slots of said side plates, whereby said cooler is extracted by removing said set screws, inserting the still assembled cooler and dewer-detector into the tool such that said housing of said coller fits into said clamps of said slide plate and whereby said mounting flange fits into the cut-out of said base plate, whereby the tongues of said drop plates are then inserted into said slots of said side plates such that said drop plate fits around and retains said mounting flange, and whereby said lead screw is rotated to cause said slide to move with respect to said base plate and to pull on said housing of said cooler such that said cold finger flange is pulled from said mounting flange.

4,397,071

METHOD OF INSTALLING REPLACEABLE SLEEVE IN FIXED VORTEX FINDER

Delbert I. Liller, P.O. Box 64, Deer Park, Md. 22150

Division of Ser. No. 56,108, Jul. 9, 1979, Pat. No. 4,235,363, which is a division of Ser. No. 2,731, Jan. 11, 1979, Pat. No. 4,224,143. This application Jul. 30, 1980, Ser. No. 173,557
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ B23P *6/00*; B04C *5/13*
U.S. Cl. 29—401.1 1 Claim



1. A method of installing a quick-change sleeve in a vortex finder of a cyclone having a bottom dish and orifice in order to change the diameter of the vortex finder, which vortex finder constitutes the sole outflow for the light fractions separated in a centrifugal cyclone, a jigging cyclone or a clarifying cyclone, said method comprising the steps of:

(a) providing a plurality of doughnut shaped metal holders having a flange thereon which abuts against the lower edge of said vortex finder,

(b) providing a sleeve kit containing a plurality of sleeves, each one thereof having a length of at least 0.3B, where B is the inner diameter of the cyclone bowl, and a different graduated diameter from any other sleeve in said kit, to adjust the outflow of light fractions,

(c) welding a sleeve of said sleeve kit inside of a corresponding said doughnut shaped holder,

(d) cutting a bayonet slot at the lower edge of said vortex finder sleeve,

(e) welding a bayonet pin to the flange above said doughnut shaped holder to fit into said bayonet slot, and

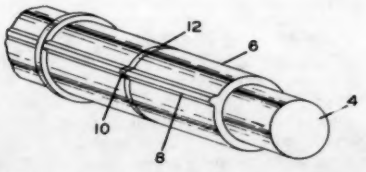
(f) selectively limiting the diameter of said sleeve in said kit from 0.3B to 0.5B where B is the inner diameter of the bowl of said cyclone.

4,397,072

VARIABLE WIDTH EMBOSSING ROLL

Jacob A. Otthofer, Jr., Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 24, 1981, Ser. No. 295,631
Int. Cl.³ B23P *6/00*
U.S. Cl. 29—401.1 1 Claim



1. A method of expanding the width of at least two or more embossing sleeves mounted on an embossing mandrel, comprising the steps of:

(a) assembling said sleeves on said mandrel with a washer positioned between each of said sleeves, said washer having a thickness equal to a fraction of the width increase that one desires to expand the embossing roll, with each said washer having a diameter greater than the maximum diameter of the embossing sleeves, and

(b) cutting and shaping the outside edge of each washer to a contour pattern so that there will be a blending of the pattern from the edge of one sleeve to the edge of the other sleeve there the two sleeves are spaced apart by a washer with the surface of the washer shaped to provide the blending of the two patterns.

4,397,073

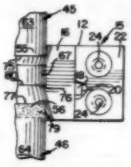
METHOD FOR ASSEMBLING CONTAINER HALVES

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Division of Ser. No. 40,354, May 18, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,309

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—446 **6 Claims**



1. A method of assembling complementary metal can components including an inner and an outer component of cylindrical thin wall sections with open ends each of which normally assumes a non-round shape and each have substantially the same internal and external diameters, comprising:

axially aligning the components in opposing end to end relation;

inserting the end of one aligned component into a frusto-conical portion of a rounding die and holding the same in a cylindrical configuration;

then guiding the end of the other aligned component toward the end of the one component through another frusto-conical portion of said die which slightly compresses the same elastically sufficient to enable insertion of said end of the other component within the end of the one component in telescoping relationship therewith, then releasing the container and allowing the inner container end portion to expand radially against the outer container end portion to load the same in tension.

4,397,074

METHOD OF FORMING A GANG CUTTING TOOL ASSEMBLY AND TOOL FORMED THEREBY

Henry M. Thornton, and John S. Thornton, both of York, Pa., assignors to Ashcombe Products Company, Dover, Pa.

Filed Feb. 4, 1981, Ser. No. 231,340

Int. Cl.³ B23P *23/02*

U.S. Cl. 29—564 **3 Claims**

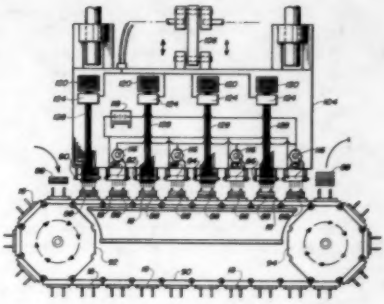
1. Mechanism for forming product sheets of rigid material having a pattern of holes uniformly formed therein comprising in combination:

(a) a pattern sheet containing an entire pattern of locations for holes to be formed in said sheets,

(b) a plurality of plug-like members having a diameter at least equal to the diameter of powered tool heads to be used to form said holes in gang multiple head manner in said product sheets and provided with a central sharp projection on one end thereof adapted to be positioned on selected locations of holes of said pattern sheet without interference between any of the members for at least pricking said pattern sheet at selected hole locations on said sheet to form sets of partial patterns of holes, a series of sets of partial patterns of holes comprising the entire pattern thereof on said pattern sheet,

(c) a perforated tape for a numerically controlled drilling machine on which the locations of said sets of partial patterns of holes are digitized for use in a numerically controlled drilling machine, and operable to drill respectively on a set of rigid support plates partial patterns of attachment holes,

(d) a plurality of powered tool heads of uniform diameter,



(e) means to connect said tool heads to said patterns of attachment holes in said support plates to form a set of patterned gangs of tool heads on said plates,

(f) base plates to support one or more product sheets of material,

(g) a series of reciprocable machine heads respectively adapted to support and reciprocate said series of patterned gangs of tool heads, and

(h) means to move said base plates with product sheets thereon sequentially beneath said machine heads to have partial patterns of holes machined therein ultimately to form complete patterns of holes in said product sheets.

4,397,075

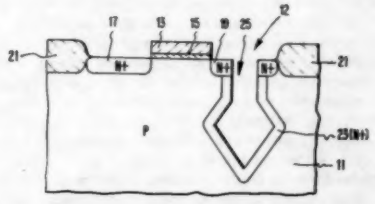
FET MEMORY CELL STRUCTURE AND PROCESS

Joseph J. Fatula, Jr., Beacon, N.Y., and Paul L. Garbarino, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,592

Int. Cl.³ H01L *21/225*

U.S. Cl. 29—571 **11 Claims**



1. A method for producing a dense MOS FET memory device having a vertical capacitor comprising

providing a monocrystalline silicon substrate having a gate including a gate dielectric layer on said substrate, a gate electrode layer on said dielectric layer and source and drain regions in said substrate on opposite sides of said gate;

reactive ion etching a substantially U-shaped opening into said substrate in said drain region adjacent to said gate;

growing a silicon dioxide layer on the surface of said U-shaped opening;

reactive ion etching said U-shaped opening deeper into said substrate to form a deeper U-shaped opening;

etching said deeper opening with a directional etchant to form a well having an enlarged buried opening;

removing by etching said silicon dioxide from said well;

diffusing an impurity into the surfaces of said well and;

forming electrical contacts to the source and to said gate electrode layer.

8. A method for producing a vertical capacitor comprising:

providing a monocrystalline silicon substrate of a first conductivity type and having a region of a second conductivity type in said substrate;

reactive ion etching a substantially U-shaped opening into said substrate into and through said region of second conductivity type;

growing a silicon dioxide layer on the surface of said U-shaped opening;

reactive ion etching said U-shaped opening deeper into said substrate to form a deeper U-shaped opening;

etching said deeper opening with a directional etchant to form a well having an enlarged buried opening;

removing by etching said silicon dioxide from said well;

diffusing an impurity into the surfaces of said well;

and

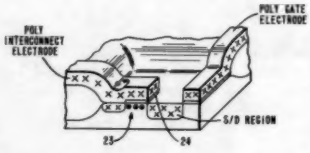
forming electrical contact to the said region of second conductivity type.

4,397,076

METHOD FOR MAKING LOW LEAKAGE POLYCRYSTALLINE SILICON-TO-SUBSTRATE CONTACTS

Edward H. Honnigford, Dayton, Ohio, and Vinod K. Dham, Fremont, Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 14, 1981, Ser. No. 301,557
Int. Cl.³ H01L *21/22, 21/265*
U.S. Cl. 29—571 **6 Claims**



1. A process for making a contact to electrically connect a first dopable interconnect layer with a dopable region in a semiconductor substrate, comprising the steps of:

defining a first region on said substrate, said first region being adjacent said dopable region in said substrate and covered by a first dielectric layer;

implanting said defined first region with a dopant of a first impurity type to a concentration adequate to form a depletion mode channel;

removing a segment of said first dielectric layer to expose a segment of said substrate within said defined first region;

depositing a first dopable interconnect layer to completely cover said exposed segment of said substrate;

etching said first dopable interconnect layer to retain a segment within said defined first region without exposing said segment of substrate;

removing exposed areas of first dielectric layer; and

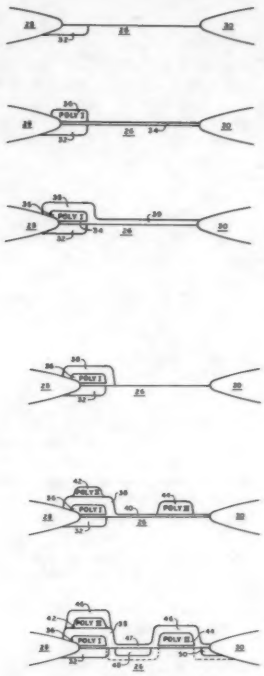
doping said first interconnect layer, said dopable region in said substrate, and said exposed segment of said substrate through said first interconnect layer, with a dopant of first impurity type.

4,397,077

METHOD OF FABRICATING SELF-ALIGNED MOS DEVICES AND INDEPENDENTLY FORMED GATE DIELECTRICS AND INSULATING LAYERS

Gary F. Derbenwick; James R. Adams; Matthew V. Hanson, and William D. Ryden, all of Colorado Springs, Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Filed Dec. 16, 1981, Ser. No. 331,475
Int. Cl.³ H01L *21/76*
U.S. Cl. 29—571 **23 Claims**



1. A method of fabricating an MOS device on a substate, comprising:

(1) forming a first gate dielectric over the substrate; then

(2) defining a gate electrode over the gate dielectric; then

(3) establishing a single isolating layer over the gate electrode and in the region of the gate dielectric not covered by gate electrode said isolating layer contacting the top and side surfaces of said gate electrode, said isolating layer being thicker on the top and side surfaces of said gate electrode and thinner on the other regions; then

(4) anisotropically etching the isolating layer and the gate dielectric from the substrate but leaving at least a substantial portion of the isolating layer on the top and sides of the gate electrode; and then

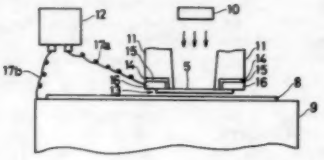
(5) establishing a second gate dielectric over the stripped portion of the substrate, whereby the isolating layer and both gate dielectrics are established independently for independently controlling their individual thickness so that subsequently formed components may be properly isolated from the gate electrodes and employ a gate dielectric of a desired thickness.

4,397,078

METHOD AND APPARATUS FOR MEASURING A GAP DISTANCE BETWEEN A MASK AND A WAFER TO BE USED IN FABRICATION OF SEMICONDUCTOR INTEGRATED CIRCUITS

Issei Imahashi, Yamanashi, Japan, assignor to Telmec Co., Ltd., Japan

Filed Aug. 3, 1981, Ser. No. 289,199
Claims priority, application Japan, Aug. 11, 1980, 55-110782
Int. Cl.³ H01L 21/66, 21/68
U.S. Cl. 29—574 6 Claims



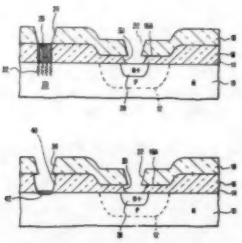
1. A method for measuring a gap distance between a mask and a wafer to be used in fabrication of semiconductor integrated circuits, characterized by the steps of forming an electrode on a mask having a pattern of a semiconductor integrated circuit, positioning said mask as spaced from a wafer at a certain gap distance, and measuring said gap distance between said mask and said wafer by detecting an electrostatic capacitance between said electrode and said wafer.

4,397,079

PROCESS FOR IMPROVING THE YIELD OF INTEGRATED DEVICES INCLUDING SCHOTTKY BARRIER DIODES

Arunachala Nagarajan, Wappingers Falls, and Homi G. Sarkary, Hopewell Junction, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 30, 1981, Ser. No. 249,260
Int. Cl.³ C23C 15/00
U.S. Cl. 29—576 B 7 Claims



1. An improved method of forming Schottky barrier diodes, while forming associated devices having active regions, in an integral semiconductor substrate, comprising the steps of:

(a) forming an insulative oxide layer on a surface of said substrate;

(b) forming a further, protective layer over said oxide layer;

(c) positioning a mask on said protective layer, said mask having openings therein corresponding (1) to anode openings for said Schottky barrier diodes and (2) to active region openings for said associated devices to be formed by diffusion in said substrate;

(d) positioning said substrate with the layers and mask thus formed in a purely inert atmosphere;

(e) exposing said substrate thus formed to a beam of ions so as to etch said Schottky anode openings and said associated device region openings in said protective layer;

(f) forming the diffusion openings in said oxide layer for the creation of said active regions of the associated devices; and

(g) diffusing impurities through said diffusion openings, whereby active regions for the associated devices are formed by the diffusion without causing shorts in the substrate region beneath said Schottky anode openings.

4,397,080

PROCESS FOR PREPARATION OF SUPPORT TOOLING FOR EXTRUSION DIES

Jay H. Muusse, Spring Lake, Mich., assignor to Me-U-Sea, Inc., Spring Lake, Mich.

Filed Nov. 10, 1980, Ser. No. 205,731
Int. Cl.³ B22D 11/126; B21K 5/20; B22C 9/02
U.S. Cl. 29—527.6 3 Claims

1. A process for preparation of support tooling for extrusion dies including the steps of:

(1) sizing a foamed plastic pattern to include a central opening therethrough;

(2) placing said plastic pattern in a flask and burying said pattern in sand with a sprue form connected to said pattern;

(3) casting metal into said pattern cavity surrounded by said sand and vaporizing said foamed plastic and forming said metal to a cylindrical form in said sand;

(4) parallelizing two spaced-apart faces of said cylindrical form by light machining of both faces;

(5) trueing said form for concentricity about the cylinder axis;

(6) hardening said form as desired;

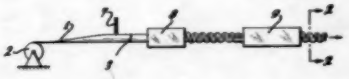
(7) mounting said cylindrical support form in support engagement for an extrusion die on the downstream side thereof, wherein said sizing is achieved by a hot wire to provide a cylindrical pattern including a uniformly configured central opening therethrough having the same configuration as the central opening of said extrusion die but of increased outer dimensions, said pattern having two spaced-apart parallel end faces.

4,397,081

MAKING A SUPERCONDUCTIVE TUBE

Gerhard Ziemek, Langenhagen, and Herbert Kubiak, Hanover, both of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,094
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016179
Int. Cl.³ H01V 11/14
U.S. Cl. 29—599 7 Claims



1. The method of making a copper-stabilized, corrugated tin-niobium superconductor which includes brushing copper onto one side of a niobium ribbon, electroplating additional copper onto the brushed-on copper, folding the ribbon into a split tube, the copper facing inwardly, welding the adjoining edges of the ribbon and corrugating the resulting tube, the improvement comprising:

providing a very thin copper layer including brushing copper particles onto the opposite side of said niobium ribbon, prior to forming said split tube, the copper particles facing outwardly after said forming;

applying tin to the outer copper layer; and

heat-treating the tube with tin sufficiently applied for obtaining diffusion of the tin through the outer copper layer followed by formation of Nb_3Sn as the tin diffuses into the niobium.

4,397,082

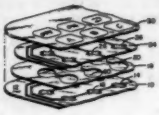
MEMBRANE SWITCH HAVING ADHESIVE LABEL AS EDGE SEAL

Stephen K. Petersen, Rosemount, Minn., assignor to Sheldahl, Inc., Northfield, Minn.

Division of Ser. No. 159,954, Jun. 16, 1980, Pat. No. 4,375,018. This application Sep. 20, 1982, Ser. No. 420,273

Int. Cl.³ H01H 11/00

U.S. Cl. 29—622 3 Claims



1. A method of making a membrane switch array comprising the steps of:

(a) providing a substrate of flexible insulative material adapted to be folded about a fold line;

(b) forming first and second sets of conductive elements at predetermined coordinate locations on opposite sides of said fold line;

(c) forming a spacer member having a pattern of apertures corresponding to the spacing of said predetermined coordinate locations from a sheet of flexible insulative material, the outer dimensions of said spacer member being less than the corresponding dimensions of a portion of said substrate on one side of said fold line;

(d) juxtaposing said spacer member on said pattern of said substrate on said one side of said substrate with said apertures surrounding said first set of conductive elements;

(e) folding said substrate along said fold line so that the second set of conductive elements on said substrate are surrounded by said apertures; and

(f) adhesively bonding a label layer to the folded substrate such that said label layer is adhesively bonded directly to predetermined perimeter areas of said substrate and said one side of said spacer member and to the other side of said spacer member.

4,397,083

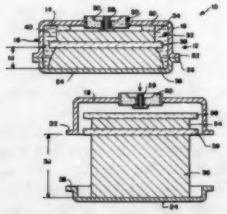
CATHODE STRUCTURE AND METHOD

Vincent O. Catanzarite, 365 Desert Inn Rd., Las Vegas, Nev. 98109

Continuation of Ser. No. 896,513, Apr. 17, 1978, abandoned. This application Oct. 21, 1980, Ser. No. 199,344

Int. Cl.³ H01M 6/00, 4/08

U.S. Cl. 29—623.2 13 Claims



10. In a method of assembling an electrochemical cell having (i) a casing arrangement including a top member and a bottom cup-shaped member which defines a fluid sealed inner compartment and which includes means defining first and second electrically insulated terminals, and (ii) means located within said compartment for producing a voltage difference across said terminals, said voltage difference producing means including a plurality of solid components including a compressible material and a liquid electrolyte, said method comprising:

(i) forming said compressible material into a pellet having a weight and density thereby forming one of said solid components;

(ii) stacking said solid components in said bottom cup-shaped member, said solid components extending up from the top edge of said bottom cup-shaped member a predetermined distance;

(iii) positioning the top member on top of said solid components;

(iv) compressing said top and bottom members together to compress said solid components within said compartment;

(v) attaching said members together;

(vi) immersing said casing arrangement including said solid components in a bath of said liquid electrolyte;

(vii) subjecting said bath including said immersed casing arrangement to a vacuum, whereby said liquid cathode fills said compartment to the exclusion of substantially all gases therein; and

(viii) after filling said compartment with said liquid electrolyte fluid sealing said compartment.

12. In a method of assembling an electrochemical cell including

(i) a casing arrangement which defines a fluid sealed inner compartment and which includes means defining first and second electrically insulated terminals, and

(ii) means located within said compartment for producing a voltage difference across said terminals, said voltage difference producing means including a solid cathode collector and a plurality of other solid constituents, said method comprising:

(a) baking said cathode collector to substantially completely remove any moisture therein;

(b) placing said voltage difference producing means including said baked cathode collector in said compartment;

(c) enclosing said voltage difference producing means in said casing;

(d) subjecting said incased voltage difference producing means to a predetermined elevated temperature for a predetermined time; and

(e) introducing and sealing fluid within said casing subsequent to the step of subjecting said incased voltage difference producing means to said elevated temperature.

4,397,084

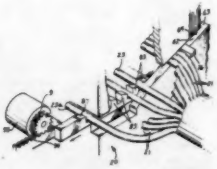
CONDUCTOR ESCAPEMENT APPARATUS

Roger G. A. Ebrey, Snellville, and Herbert A. Sckerl, Norcross, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed May 22, 1981, Ser. No. 266,272

Int. Cl.³ B23P 19/00

U.S. Cl. 29—749 5 Claims



1. Apparatus for rearranging a contiguous array of end portions of elongated insulated conductors in an array in which the conductors are on predetermined centers, said apparatus comprising:

a guideway for receiving end portions of a plurality of insulated conductors which extend from a cable and which are disposed contiguously in a substantially planar array, said guideway including a first portion which is inclined at a first angle to a horizontal axis and which receives the array, and a second portion including an exit from which

conductors of the array are discharged seriatim, said second portion being inclined at a second angle to the horizontal axis, said second angle being greater than said first angle;

feed means for urging the array along said guideway toward said exit;

a carrier including a plurality of conductor-receiving nests which are spaced apart on the predetermined centers and gate means associated with each of said nests, said carrier including a plurality of spaced, upstanding teeth with said nest being formed between adjacent teeth and with each of said teeth having an outwardly facing crown surface, which is formed at an angle transverse of sidewalls that define said teeth, said gate means including a wedge-shaped portion of each tooth which is formed between said crown surface and one of said sidewalls of each said tooth;

mounting means for supporting said carrier for movement in a direction past said exit to allow each said nest and each said crown surface to be aligned seriatim with said exit and to cause said gate means to be oriented in a direction in which the carrier is moved, the direction of movement of said carrier being inclinded to at least said second portion of said guideway; and

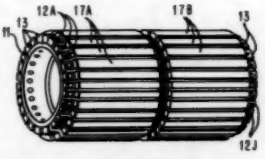
means for moving said carrier to align each of said nests with said exit, whereupon said feed means is effective to cause each successive leading conductor in said guideway to be disposed fully within the aligned nest, and to align each said crown surface with said exit, said angle of said crown surface being such that subsequent to the descent of each leading conductor into an aligned nest said gate means of the succeeding tooth protrudes into said exit of said guideway to prevent the inadvertent descent of the following conductor, and wherein said second portion of said guideway cooperates with each successive crown surface that is aligned with said exit to prevent entrapment of the leading conductor in the guideway between said each successive crown surface and surfaces which define said second portion of said guideway.

4,397,085

METHOD OF MANUFACTURE OF A MULTI-WIRE NONIMPACT PRINTHEAD

Willie Goff, Jr., and William M. Jenkins, Both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,516
Int. Cl.³ H01K *3/10*
U.S. Cl. 29—850 **16 Claims**



1. A method of making a plurality of multi-wire printheads comprising the steps of:

forming a cylindrical support shell,

assembling a plurality of inboard slats on said cylindrical support shell, parallel to the longitudinal axis thereof,

engraving a helical thread across said inboard slats,

wrapping a wire in said helical thread,

assembling a plurality of outboard slats on the wrapped wire, a respective one of said outboard slats being aligned with a respective one of said inboard slats, and

cutting the cylindrical support shell and the wrapped wire parallel to the longitudinal axis of the cylindrical support shell between adjacent inboard slats to produce a plurality of multi-wire printheads having said cylindrical support shell as an integral part thereof.

4,397,086

METHOD OF FABRICATING A SOCKET TYPE ELECTRICAL CONTACT

John G. Bickos, Unadilla; Gilbert G. Warren, and R. Amelia Piscitelli, both of Sidney, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jan. 26, 1981, Ser. No. 228,492
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—876 **4 Claims**

1. A method of fabricating a socket type electrical contact for use in an electrical connector comprising the steps of:

plating a strip of beryllium copper with nickel;

plating only one end portion of one side of said strip with a first layer of gold to a thickness of at least 0.625 micrometers;

stamping, from said sheet a rectangularly shaped piece having a plurality of fingers extending longitudinally from one end of said piece;

forming said rectangular piece into a tubular form;

heating said tubular form in a vacuum furnace at a pressure below 50 microns for at least 2 hours and 15 mintues at a temperature of about 489 degrees centigrade; and

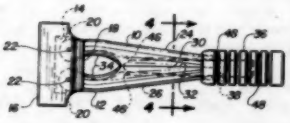
plating the entire tubular form with a second layer of gold to a thickness less than 0.250 micrometers.

4,397,087

FOOD-TYPE COMBINATION UTILITY DEVICE HAVING HAMMER-LIKE HEAD

Robert H. Burrage, MR 57 - Stonewood Rd., York, Pa. 17402

Filed Jun. 22, 1981, Ser. No. 275,624
Int. Cl.³ A47G *21/06*
U.S. Cl. 30—120.3 **6 Claims**



1. A food-type utility device comprising in combination:

a. a pair of similar complementary elongated handles having mating flat surfaces extending from one end and separably abutting each other,

b. opposing surface portions of the outer end portions of said handles having similar curved recesses operable to crack shell-type foods,

c. a head extending transversely to the opposite ends of said handles and having a recess to receive the same,

d. pivot means connecting said opposite ends of said handles to said head, whereby said head is operable as a hammer for use with shellfish and the like, and

e. a unitary handle member having a socket extending longitudinally inward from one end thereof, said socket being complementary to the abutting portions of said one end of said elongated pivoted handles and frictionally but separably engaging the walls of said socket.

4,397,088

POWER EQUIPMENT UNIT WITH SPLIT HANDLE

Wilbur J. Hampel, Spring Park, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Feb. 9, 1981, Ser. No. 232,450
Int. Cl.³ H01D 50/00
U.S. Cl. 30—296 R 6 Claims

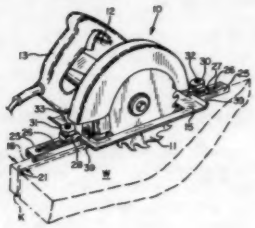
1. An outdoor power equipment unit, which comprises:
(a) a housing;
(b) an active element carried on the housing for performing a ground grooming or working action;
(c) an elongated handle assembly extending upwardly from the housing and of sufficient length to be held by an operator who is standing when the housing is positioned closely adjacent to or in contact with the ground, wherein the handle assembly comprises separate upper and lower handle tubes which are hollow to define an open interior having at least a minimum cross-sectional area, wherein the handle tubes have mating ends adjacent one another when assembled, wherein the mating ends of the handle tubes are telescopically overlapped with each end having at least one set of apertures which may be aligned with the apertures of the other overlapped end;
(d) power means for driving the active element, wherein the power means incudes an elongated component extending downwardly through the open interior of the handle assembly and having a predetermined cross-sectional area less than the minimum cross-sectional area of the open interior; and
(e) means for rigidly securing the handle tubes together without penetrating into the minimum cross-sectional area of the open interior to an extent that would interfere with the elongated component of the power means, whereby the elongated component need not be manipulated out of the way of the securing means during assembly of the handle tubes, wherein the securing means comprises:
(i) two approximately semi-circular sleeves which are suited to be abutted face-to-face and when so abutted surround the mating ends of the handle tubes;
(ii) fastening means for clamping the sleeves together in a rigid manner around the handle tubes to hold the handle tubes together; and
(iii) a set of inwardly projecting lugs on the sleeves which are received respectively in the apertures on opposite sides of the handle tubes, wherein the lugs are sufficiently short to extend into the apertures approximately only so far as the thickness of the overlapped ends of the handle tubes so as not to penetrate substantially into the open interior of the handle tubes.

4,397,089

STRAIGHT LINE GUIDE ON ELECTRIC POWER HAND SAW

Mason E. Pease, Pacific City, Oreg., assignor to Andrew Mason Pease, Gresham, Oreg.

Filed Jan. 26, 1981, Ser. No. 228,879
Int. Cl.³ B27B 9/04
U.S. Cl. 30—373 5 Claims



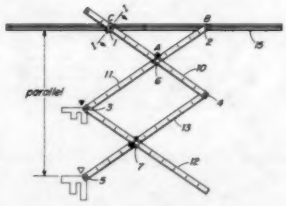
1. In an electric power hand saw having a shoe to support the saw for movement on the face of a workpiece, a guide bar arranged for sliding engagement with an edge of the workpiece, means for mounting said guide bar on said shoe in different adjusted positions, said different adjusted positions being parallel with the blade of the saw within a small range determined by the width of said shoe for trimming a narrow strip off a straight edge of a workpiece such as a wood panel, said mounting means comprising a pair of clamps on said guide bar engagable with the opposite ends of said shoe, said clamps being slidable across said ends of said shoe and slidable lengthwise on said guide bar for adjusting the position of the guide bar laterally and longitudinally in relation to the saw, each of said clamps comprising an apertured lug having an ear overlying said shoe, said guide bar underlying said shoe and having a longitudinal slot to receive a bolt through the aperture in each lug, at least one of said lugs being elongated with said ear on one end thereof and only the other end thereof bearing against said guide bar, said bolt extending through an intermediate portion of said lug to apply leverage on the clamping base of said ear, and means on said lugs engaging said slot in said guide bar to prevent rotation of the lugs on said guide bar.

4,397,090

REPROPORTIONING GRAPHICAL PANTOGRAPH

Raymond Nicyper, 73 Birch Hill Ext., Weston, Conn. 06883

Filed Sep. 29, 1981, Ser. No. 306,704
Int. Cl.³ B43L 13/10
U.S. Cl. 33—25 R 15 Claims



1. A pantograph for graphically reproducing images, comprising at least one guide track; four elongated bars having free ends and connecting points at which the respective bars are pivotally connected to each other; two guide pins on said bars adapted to slide along said track; a tracer on said bars for tracing an original image; a marker on said bars for graphically

reproducing a required image; at least two intersecting elements, each being slidable and selectively positionable along two of said bars and permitting relative pivotal movement between the associated two bars for defining proportions of the image to be reproduced, said tracer and said marker being so positioned on said bars that they extend through a common plane; said guide pins, said tracer and said marker being interchangeably positionable at said free ends and at said connecting points to thereby reproportion images by condensing, expanding, or reversing, or inclining images in any desired direction.

4,397,091

DISPENSING CONTAINER FOR VENUS CATHETERS

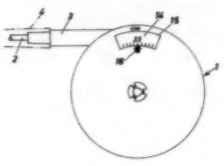
Bengt Gustavsson, Bergsbogatan 29, Västra Frölunda, Sweden (421 79); Johan Curelaru, Dr. Lindsgata 3, Göteborg, Sweden (413 25), and Lars-Erik Linder, Varbergsvägen 319, Billdal, Sweden (427 00)

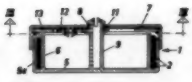
Filed Oct. 22, 1981, Ser. No. 313,990

Claims priority, application Sweden, Oct. 22, 1980, 8007400

Int. Cl.³ G01B *3/00*; A61M *5/00*

U.S. Cl. 33—127 **4 Claims**





1. In a container for the sterile storage and sterile dispensing of a catheter intended for insertion into a blood vessel wherein the catheter is stored in the container and the container is a hollow casing comprising an open-ended drum part and a lid part closing the open end of the drum part and rotatably interconnected therewith having an outlet opening for dispensing the catheter therethrough and wherein a rotatable feeding means is provided comprising two concentrically spaced peripheral walls in the drum part forming a peripheral annulus in which the catheter is helically coiled so that rotation of the drum part with respect to the lid part in the feeding direction causes the catheter to advance out through the outlet so that the length of catheter being dispensed is proportional to the angle of rotation of the drum part, the total length of the catheter corresponding to more than one revolution of the drum part, the improvement comprising at least one rotatable indicating means rotatably mounted in said container, indicia showing units of length on said indicating means for indicating the length of catheter dispensed through said outlet, means on said container for viewing at least one of said units at predetermined points of rotation of said indicating means, and a reduction transmission operatively connecting said feeding means to said indicating means comprising a first gear wheel fixedly attached concentrically to said drum part, to rotate therewith and a ring gear integral with said indicating means rotatably mounted on said lid part and operatively connected with said first gear wheel so that said indicating means is driven by said first gear wheel at a lower speed of revolution than said feeding means and said length units show fractional parts of the total feeding means, said indicia being graduated to cover the total length of the catheter.

4,397,092

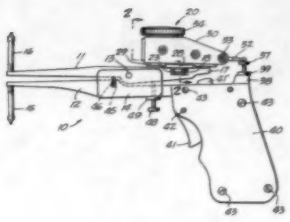
CALIPER WITH DIAL INDICATOR CLAMP AND PISTOL GRIP

Stanley T. Marcyan, 1860 Verdugo Loma, Unit C, Glendale, Calif. 91208

Filed Jun. 22, 1981, Ser. No. 275,852

Int. Cl.³ G01B *5/12*

U.S. Cl. 33—148 R **10 Claims**



1. A clamp for releasably clamping a dial indicator to a machinist's tool comprising:

an elongated tool member having an open-ended notch transversely thereof bridged by an open-ended female dovetail member extending lengthwise of said tool member and adapted to slidably seat a cooperating conventional male dovetail member rigidly attached to the main body of a dial indicator;

said female member having a bore through the bottom thereof;

a cap screw having its head positioned in said bore and its shank extending into said notch and including means for holding said screw against rotation; and

a knurled nut rotatably mounted on said cap screw effective to hold said cap screw loosely assembled to said tool member and rotatable when the male dovetail member is assembled in said female dovetail member to force the head of said screw against said male member and clamp the same immovably but releasably in place in said female member.

4,397,093

PROBE FOR USE IN MEASURING APPARATUS

David R. McMurtry, Gloucestershire, England, assignor to Rolls Royce Limited, London and Renishaw Electrical Limited, Gloucestershire, both of, England

Continuation of Ser. No. 267,068, May 26, 1981, which is a continuation of Ser. No. 39,786, May 17, 1979, Pat. No. 4,288,925, which is a continuation of Ser. No. 864,151, Dec. 23, 1977, abandoned. This application Sep. 2, 1982, Ser. No. 414,502

Claims priority, application United Kingdom, Dec. 24, 1976, 54032/76; May 28, 1977, 22656/77

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—174 L **4 Claims**

1. A device for mounting a stylus in position-determining apparatus wherein said device and an object are movable relative to each other for engaging the stylus with the object and by such engagement sense the position thereof, said device comprising:

a fixed member having an axis,

a movable member to which a stylus is connectable,

first surface means provided on said fixed member and arranged around said axis in a plane transverse therto,

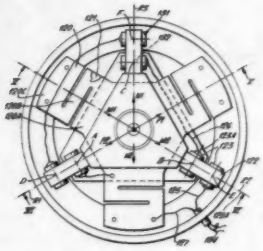
second surface means provided on said movable member and confronting said first surface means,

bias means for urging said movable member into engagement with said fixed member at said first and second surface means thereby to locate said movable member on said fixed member in an axial rest position thereon,

a centering member connected between said fixed and said movable member,

said centering member being made of sheet material having a mean sheet plane extending transversely to said axis when said movable member is at said rest position,

said sheet material being rigid against deformation in said



sheet plane but being otherwise flexible and said centering member thereby cooperating to prevent displacement of said stylus relative to said fixed member rotationally about said axis and translationally in any direction transverse to said axis when said movable member is at said rest position but to permit displacement of said movable member from said rest position translationally in the direction of said axis and angularly in any plane through said axis when a force is applied to said movable member,

and said bias means cooperating to return said movable member to said rest position when said force ceases.

4,397,094

APPARATUS FOR POSITIONING AND ALIGNING DIES

Iwao Nakamura, Mobara, Japan, assignor to Futaba Denshi Kogyo K.K., Chiba, Japan

Filed Dec. 1, 1980, Ser. No. 211,850

Int. Cl.³ G01B *3/30, 3/38, 5/14, 5/24*

U.S. Cl. 33—181 R **3 Claims**

1. Apparatus for accurately locating and aligning dies comprising:

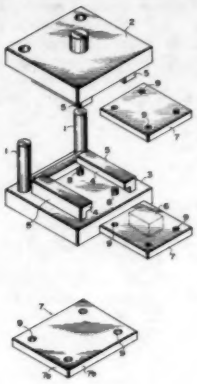
a die changing apparatus including a pair of upper and lower die fixtures having locating pins on the sides facing each other;

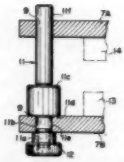
a pair of base plates for securing upper and lower dies having a plurality of openings sized and positioned for receiving said locating pins for locating one each of said base plate on said fixtures;

means for removably securing one of said base plates on each said fixture;

at least two guide posts each having a stud portion sized and positioned for insertion into one of said openings provided in one base plate of said pair of the base plates and a guide portion to be inserted into another of said openings provided on a remaining base plate of said pair of the base plates for permitting vertically reciprocal movement of said other base plate along the length of said guide post, said guide portion and said stud portion being coaxial and of the same diameter in order to permit precise alignment of the dies on the base plates relative to said openings therein; and

means for removably fastening each said guide post to the base plates so as to temporarily erect each said guide post on the base plates prior to positioning said base plates on





said die changing apparatus fixture via said pins and openings.

4,397,095

REGISTRATION AND TRANSFER LOCKING UNIT FOR A STEEL RULE DIE AND ACCOMMODATING COUNTER PLATE

Herman A. Graboyes, Mishawaka, Ind., assignor to Atlas Steel Rule Die, Inc., Elkhart, Ind.

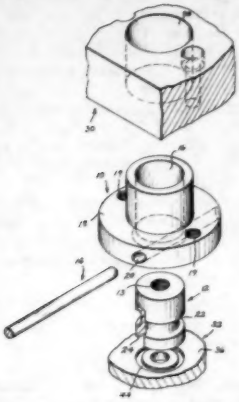
Filed Apr. 9, 1981, Ser. No. 252,627

Int. Cl.³ B26D *5/08*

U.S. Cl. 33—181 R **5 Claims**

1. In a combination die and an accommodating counterplate assembly for scoring and cutting sheet material located therebetween, means for securing said die over said counterplate in an opposed face-to-face manner and in a precise aligned relationship for transfer to a press where said scoring and cutting of sheet material can occur, the improvement wherein said die and counterplate securing means includes a bushing having a longitudinal bore and a guide pin adapted to fit snuggly into said bushing longitudinal bore, an opening formed in one of said die and counterplate, said bushing fitted into said opening and secured to said one of the die and counterplate, said bushing including an end portion extending beyond the opposing face of said one of the die and counterplate, said bushing end portion having a transverse bore therethrough intersecting its longitudinal bore, said guide pin secured to the other of said die and counterplate, said guide pin protruding from the opposing face of said other of the die and counterplate and having a side wall with a groove therein said guide pin fitting into said bushing longitudinal bore when said die and counterplate are in their aligned relationship with said guide pin groove registering with said bushing transverse bore, a removable lock pin means fitable into said registering guide pin groove and bushing transverse bore for securing said guide pin within said

bushing, said guide pin groove having a width exceeding the transverse dimension of said lock pin means to permit limited



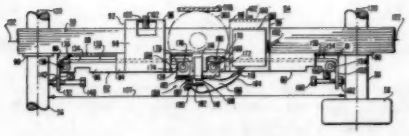
relative longitudinal movement of the guide pin within the bushing to allow aligned movement of the die relative to the counterplate.

4,397,096

METHOD OF AND APPARATUS FOR POSITIONING THE DRIVE UNITS OF A PLURAL DRIVE ESCALATOR

Joseph K. Kraft, Parsippany, N.J., and George A. Kappenhagen, Stroud Township, Monroe County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1981, Ser. No. 292,974
Int. Cl.³ G01B 7/00
U.S. Cl. 33—181 R **14 Claims**



10. A method of determining the optimal positions of a plurality of drive units of a plural drive escalator, which drive units drive an endless, articulated belt constructed of rigid, toothed step links, pivotally interconnected via step axles to which the escalator steps are attached, comprising the steps of:

attaching indicating means to a step link, on one side of the articulated belt, with said indicating means being in a first condition when a step link is in compression, and in a second condition when it is not,

operating the escalator in the up travel direction,

riding the moving escalator adjacent to the indicating means,

placing a first mark on a stationary portion of the escalator at each drive location below the uppermost drive unit, when the indicating means changes from the second condition to the first condition to indicate that the step link has been engaged by a drive unit and the step link has been placed in compression,

placing a second mark on a stationary portion of the escalator when the indicating means changes back to the first condition,

measuring the distance between the first and second marks at each drive unit,

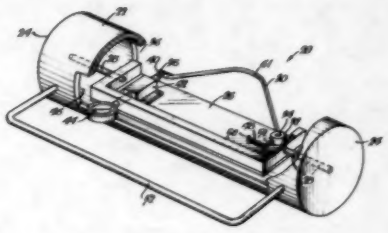
and using the measured distances to determine the optimal spacing of the drive units.

4,397,097

GAUGE FOR MEASURING ROLL NIPS

Wayne A. Damrau, and James R. Arrington, both of Wisconsin Rapids, Wis., assignors to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Oct. 22, 1981, Ser. No. 313,789
Int. Cl.³ B21B 37/00; G01B 5/14
U.S. Cl. 33—182 **9 Claims**



1. A gauge for measuring the nip between and/or the radii of a pair of working rolls, comprising carrier means; transducer means mounted on said carrier means for converting the width of the nip and/or the radii of the rolls into a signal; a probe formed of a quasi U-shaped bent rod pivotally connected at one end to said carrier means, extending along a medial portion thereof outwardly of said carrier means and having an opposite end positioned for movement against said transducer means to operate said transducer means to generate said signal; and means for pivotally urging said probe in a direction outwardly of said carrier means, said carrier means being dimensioned for insertion into the nip between the rolls and into contact with the rolls at a point outwardly of a centerline therebetween to bring the outermost portion of said medial portion of said probe into contact with the rolls outwardly of but closer to the centerline with said probe lying in a plane generally parallel to the axes of the rolls, said probe being pivotable against said urging means away from the centerline to move said opposite end thereof against said transducer means, whereby said transducer means converts the width of the nip and/or the radii of the rolls at the point of contact of said probe with the rolls into a signal representative thereof.

4,397,098

METHOD AND APPARATUS FOR ZEROING A TILT METER MECHANISM

Klaus L. Franz, Santa Cruz, Calif., assignor to Applied Geomechanics, Inc., Santa Cruz, Calif.

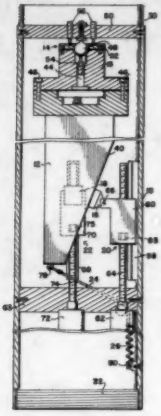
Filed Aug. 20, 1981, Ser. No. 294,571
Int. Cl.³ G01C 9/28; E21B 47/022
U.S. Cl. 33—304 **16 Claims**

1. In a tilt meter including a tilt sensor for detecting movement in an X-Y plane, means for aligning said X-Y plane of said tilt sensor with a gravitationally normal reference plane, and means for detecting when said X-Y plane has shifted relative said reference plane, an improved means for aligning said tilt sensor comprising:

(a) means supporting said tilt sensor such that said X-Y plane is movable through said reference plane, said supporting means having an axis normal to said X-Y plane, a first surface forming an acute angle relative said axis and projecting an x component along said X-Y plane, and a second surface forming an acute angle relative said axis and projecting a y component along said X-Y plane;

(b) first means in sliding abutment with said first surface, and second means in sliding abutment with said second surface; and

(c) control means for selectively moving said first means and said second means in directions parallel to said axis,



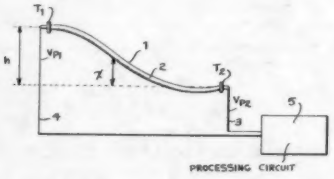
whereby said X-Y plane may be aligned with said reference plane.

4,397,099

ELECTRONIC APPARATUS FOR MEASURING THE DIFFERENCE OF ELEVATION BETWEEN TWO POINTS

Edwin Gaucher, 5 rue Hamel, apt. 203, Quebec, Quebec, Canada G1R 4J6; Rejean Desbiens, and Regis Desbiens, both of 2200 Chapdelaine apt. 603, Ste-Foy, Quebec, Canada G1V 4G8

Filed Sep. 8, 1981, Ser. No. 300,211
Int. Cl.[3] G01C *5/04*
U.S. Cl. 33—367 6 Claims



1. An electronic apparatus for measuring a difference of elevation between two points, said apparatus comprising:

(a) a tube made of a flexible material;

(b) a fluid with a low viscosity completely filling said tube;

(c) two piezoelectronical pressure transducers each connected to a source of electrical power and mounted at one extremity of the tube in contact with the fluid filling said tube to produce a signal proportional to the pressure of this fluid;

(d) electronic means connected to each of said piezoelectrical pressure transducers for processing the signals received from said transducers, said processing means comprising means for generating a signal proportional to the difference between the signals received from the transducers and means for converting said generated signal into a value indicating the difference of elevation between the extremities of the tube,

(e) means for displaying said value indicating the difference of elevation,

(f) means for generating a signal proportional to the mean temperature of the fluid filling said tube; and

(g) means for correcting said generated signal proportional to the difference between the signals received from the transducers, with said generated signal proportional to the mean temperature in order to compensate any variation of said generated signal due to a variation in the fluid temperature along the tube, wherein:

said correcting means comprises means for dividing the signal proportional to the difference of values between the signal received from the transducers by the signal proportional to the mean temperature to give a corrected output signal and

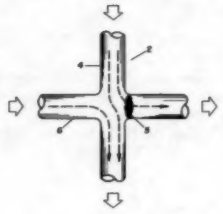
said converting means comprises an analog digital converter receiving the output signal of the dividing means and transmitting a corresponding value indicating the difference of elevation to the displaying means.

4,397,100

ORGANIC SOLID SUBSTRATE DEWATERING PROCESS BASED ON PLUG FLOW CONTACT BY AN EXTRACTIVE FLUID

Leland C. Dickey, and Maya Tayter, both of Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.

Filed Dec. 4, 1981, Ser. No. 327,610
Int. Cl.[3] F26B *3/00*; B01D *23/00*
U.S. Cl. 34—9 17 Claims



1. A method of removing water from an organic solid substrate which comprises:

(a) contacting the substrate with a solvent such that the substrate and the solvent remain in plug flow during contact to remove at least a large portion of the water therefrom in relatively pure form, and

(b) separating the substrate from the mixture of solvent and water.

4,397,101

AUTOMATIC DRYER CONTROL

Jimmy R. Rickard, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 10, 1981, Ser. No. 300,772
Int. Cl.[3] F26B *21/10*
U.S. Cl. 34—30 11 Claims

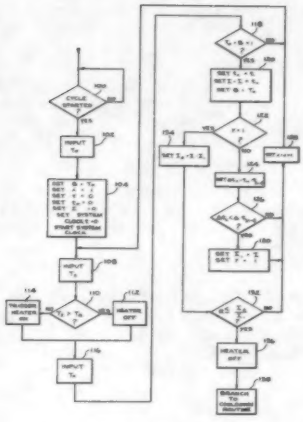
1. An automatic control system for a clothes dryer of the type having a clothes drying drum, an air flow system for passing drying air through the drum, a heater for heating the air at the inlet side of the drum, and selection means enabling the user to select a particular reference value representing the desired dryness level, and having a drying cycle having an initial warm-up period during which the outlet air temperature increases relatively rapidly from the initial temperature to a plateau temperature followed by a period of relatively constant rate of moisture removal during which the outlet air temperature remains relatively constant at the plateau temperature followed by a period of decreasing rate of moisture removal during which the temperature again increases relatively rapidly to the end point temperature, the control system comprising:

inlet air temperature sensing means for sensing the temperature of air entering the drum;

outlet air temperature sensing means for sensing the temperature of air leaving the drum; and

control means including:

means responsive to said inlet air temperature sensing means for controlling the heater to maintain the inlet air temperature at a predetermined substantially constant temperature;



clock means for measuring the elapsed time of the drying cycle designated the drying cycle time;

means responsive to said outlet air temperature sensing means and said clock means for computing an end point value which is a function of the integral of the dry cycle time as a function of outlet air temperature; and

means for initiating termination of the dry cycle when a predetermined relationship exists between said end point value and the predetermined reference value selected by the user.

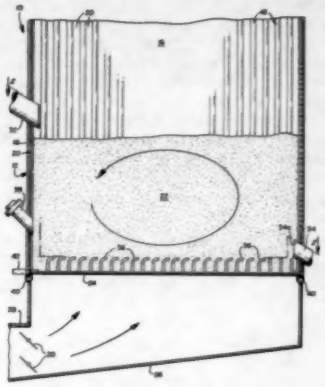
4,397,102

FLUIDIZED BED HEAT EXCHANGER INCORPORATING INDUCED CIRCULATION UTILIZING DIRECTIONAL AND/OR DIFFERENTIAL BED FLUIDIZATION

Robert L. Gamble, 27 Yellowbrick Rd., Wayne, N.J. 07470, and Robert D. Stewart, 38 Brookside Terrace, Verona, N.J. 07044

Filed Nov. 3, 1981, Ser. No. 317,979
Int. Cl.³ F26B *17/10*
U.S. Cl. 34—57 A **8 Claims**

1. A fluidized bed heat exchanger comprising a plate adapted to support a bed of particulate material, four upright walls extending around said plate to form an enclosure for said bed, inlet means extending through one of said walls for introducing additional particulate material to said bed, a plurality of nozzles supported by said plate and extending in said bed for receiving air and discharging said air in a first direction towards a wall opposite said one wall to fluidize said bed, drain means extending through said opposite wall and registering with said bed for discharging spent bed material, and an additional plurality of nozzles located adjacent said opposite wall and oriented to discharge said air in a direction perpendicular to said first direction and towards said drain means, whereby



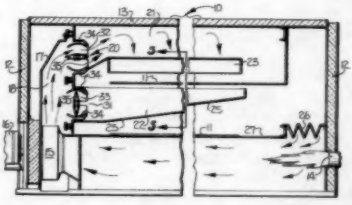
circulation of said bed material is induced from said inlet means to said drain means.

4,397,103

TEXTILE FABRIC DRYER WITH ROTARY DAMPER ARRANGEMENT

Ferdinand Ruepp, Charlotte, N.C., assignor to American Artos Corporation, Charlotte, N.C.

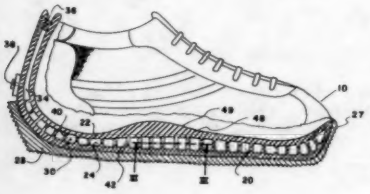
Filed Jul. 27, 1981, Ser. No. 287,164
Int. Cl.³ F26B *13/02*
U.S. Cl. 34—155 **8 Claims**



1. In an apparatus for the continuous drying of textile fabric, said apparatus comprising a housing having an inlet and outlet at opposite ends thereof and opposing side walls extending longitudinally therebetween, an air permeable conveyor belt extending longitudinally along a predetermined substantially horizontal path of travel through said housing from said inlet to said outlet for conveying textile fabric through said housing, means defining a first air passageway extending across and above said conveyor belt and longitudinally along the length thereof, means defining a second air passageway extending across and below said conveyor belt and longitudinally along the length thereof, said first and second air passageways having a common end thereof open for receiving a flow of air and each having a series of nozzles at longitudinally spaced locations along the path of travel of said conveyor belt and being oriented toward the conveyor belt for directing the air toward the textile fabric, blower means for directing a flow of heated air through said housing for drying the fabric, and damper means mounted in said housing between said air passageways and said blower means and operable for directing the heated air alternately into said first and second air passageways, the improvement wherein, said damper means comprises a frame having first and second openings arranged one above the other and extending longitudinally of said housing alongside said

longitudinally extending conveyor belt, said first and second openings communicating respectively with the open ends of said first and second passageways, respective rotatable damper elements carried by said frame and each being mounted for rotating movement in one of said openings for movement between an open position permitting flow of air through the opening and a closed position substantially blocking the opening and preventing flow of air therethrough, and a common drive means connected to said damper elements for continuously rotating the respective damper elements in a predetermined rotational direction and in out of phase relation with one another such that one of the damper elements is oriented in a closed position substantially blocking the opening in the frame while the other damper element is oriented in an open position whereby the flow of heated air is directed alternately through said first and second air passageways and is discharged through said nozzles alternately toward opposite sides of the fabric.

4,397,104
INFLATABLE SOLE-SHOE
Clayton R. Doak, 5540 Navajo Trail, Silver Springs, Nev. 89429
Filed Jan. 23, 1981, Ser. No. 227,831
Int. Cl.³ A43B *13/20, 7/08, 21/28*
U.S. Cl. 36—29 **3 Claims**



1. A shoe comprising a shoe body and an inflatable sole, said inflatable sole comprising a sole assembly to which the said shoe body is attached, said sole assembly comprising an upper lining, a lower lining, means for attaching said linings to each other about their common periphery, flexible means to space said lower lining spaced apart from said upper lining so as to provide a continuous passageway for air along the length and width of said sole,

said flexible means consisting of a plurality of spaced flexible pegs, each peg being bonded to at least one of said linings and extending to the other, said pegs having an intermediate section of reduced cross-section relative to the end sections thereof; and

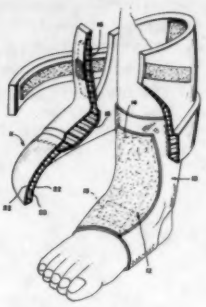
an inlet valve connected to said continuous passageway so that the passageway may be inflated with air under a common pressure for the length and width of the sole.

4,397,105
KARATE SHOE
James M. Richardson, 6212 Canobie St., Whittier, Calif. 90601
Filed Oct. 23, 1981, Ser. No. 314,367
Int. Cl.³ A43B *5/00*
U.S. Cl. 36—106 **11 Claims**

1. A protective shoe for use during the practice of the art of karate and other sports where it is useful to cover the upper part of the foot and ankle with a protective pad said shoe comprising:

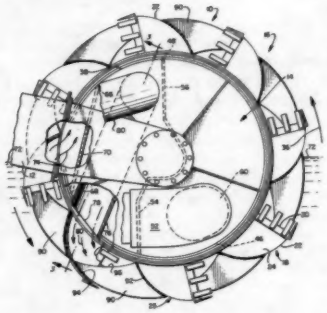
a foot surrounding member shaped to surround a portion of the wearer's foot, said shoe surrounding member having holding means affixed to the portion of the member which is positionable on the upper part of the wearer's foot; and

a shoe member fabricated from a shock absorbing material said shoe member shaped to surround the ankle and cover the upper part of the foot but being open at the bottom, said shoe member also having holding means positioned at



those places which correspond to the location of the holding means on the foot surrounding member.

4,397,106
DREDGE BUCKET WHEEL STRUCTURE
Alexander W. K. MdDowell, Annapolis, Md., assignor to Ellicott Machine Corporation, Baltimore, Md.
Filed Feb. 8, 1982, Ser. No. 346,996
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—57 **10 Claims**



1. A dredge bucket wheel comprising a relatively stationary hub section and a rim section rotatable with respect to said hub section, said rim section including a plurality of buckets connected together in circumferentially spaced relation, said buckets having radially inwardly open bottoms, said hub section including a spoil receiving hopper having a suction pipe connected thereto, and a substantially cylindrical member whose outer surface is in close adjacency to the open bottoms of said buckets to define a floor therefor, said cylindrical member having an opening therethrough leading to said hopper for depositing therein spoil from said buckets, said wheel including axially spaced, substantially circular side plate means substantially closing the sides of said wheel, and means defining a flow path back to atmosphere for air trapped in said buckets when said bucket wheel is operating at least half submerged, said flow path means comprising passage means formed in the surface of said cylindrical member between said side plates wholly on the side of the bucket wheel axis opposite the opening of said hopper, said passage means communicating the open bottoms of the buckets to atmosphere over a predetermined circumferential distance extending substantially from a point on the circumference of the wheel which is less than on bucket length's extent below the wheel axis to a point above

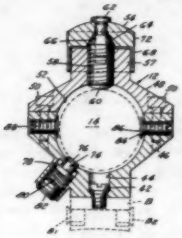
the wheel axis and the water surface, the total extent of the passage means being less than one fourth the circumference of the bucket wheel and approximately the circumferential extent of two adjacent buckets, whereby air which would be otherwise trapped in a submerged bucket is released.

4,397,107

BULLET DROP COMPENSATING SCOPE MOUNT

Gerald B. Holden, 35992 Dover, Livonia, Mich. 48150

Filed Nov. 28, 1980, Ser. No. 211,136
Int. Cl.³ F41G *1/38*
U.S. Cl. 42—1 ST **1 Claim**



1. A bullet drop compensating scope mount comprising, in combination:

front and rear scope supporting rings each having separable upper and lower halves, enabling a scope to be mounted therein;

the front ring internally sized to grippingly lock on a scope to prevent relative motion between the scope and ring;

means for mounting said front ring on a rifle for fore and aft rocking motion about a transverse pivot;

the rear ring internally sized to allow relative vertical and lateral movement of a scope embraced thereby when such ring is mounted on a rifle;

means on the rear ring for vertically adjustably positioning a scope therein, characterized by a dial graduated in distance increments and a vertical adjusting screw having a thread pitch corresponding to a determined bullet weight to be fired from a rifle on which the scope is mounted, with the dial connected to the screw;

a pair of positioning pads within the rear ring disposed on opposite lateral sides of a scope mounted in the ring with one of the pads being laterally adjustable and disposed against the scope and the opposite pad spaced closely from the scope for limiting lateral movement of a scope; and

a resilient element in the rear ring for urging a scope embraced by the ring against said one pad and against said adjusting screw to hold the scope continually thereagainst.

4,397,108

INTERACTING SPRING ASSEMBLY

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20818

Continuation-in-part of Ser. No. 3,664, Jan. 15, 1979, Pat. No. 4,258,495. This application Jan. 16, 1981, Ser. No. 225,605
The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.
Int. Cl.³ F41C *25/02*; F16F *1/22*
U.S. Cl. 42—50 **26 Claims**

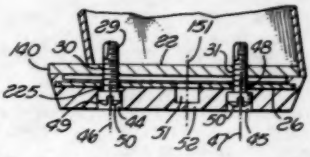
1. A member adapted for installation in an interacting spring assembly, said member including: a substantially rectangular resilient loop having crank means formed on an end thereof; said loop also having a return portion inset into an end thereof; and a side of said loop joined with a side of said return portion comprising torsional actuation means adapted for cooperation with crank means on an other loop, said other loop being identical with said resilient loop.

4,397,109

STRUCTURE AND MOUNTING OF GUN CARTRIDGE CLIP PADS

Frank A. Pachmayr, and Jack R. Farrar, both of Los Angeles, Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.

Filed Feb. 4, 1981, Ser. No. 231,382
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—50 **19 Claims**



1. The combination comprising:

a hollow cartridge clip body adapted to be contained within a recess in the handle of a gun and to hold a series of rounds of ammunition and which is slidably insertible upwardly into and removable downwardly from said recess and has a bottom wall;

a cushioning pad extending across the underside of said bottom wall and including a body of resiliently deformable elastomeric material having an undersurface of said elastomeric material exposed for contact with a user's hand in pressing the clip body upwardly into said recess;

said pad including a reinforcing element stiffer than said elastomeric material and secured thereto and located above the level of said undersurface of the elastomeric material; and

at least one threaded fastener extending upwardly through an aperture in said pad and connected threadedly to said bottom wall of the hollow clip body and having a head applying upward force to said reinforcing element in a relation securing said pad to the clip body.

4,397,110

HAND AND IMPROVED HAND SPRING FOR SINGLE ACTION FIREARM

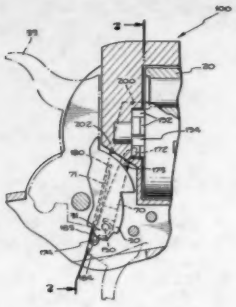
Archie C. Landry, Canoga Park, Calif., assignor to North American Mfg. Corp., Spanish Fork, Utah

Continuation-in-part of Ser. No. 98,870, Nov. 30, 1979, Pat. No. 4,316,341. This application Dec. 23, 1981, Ser. No. 333,990
Int. Cl.³ F41C *1/00*
U.S. Cl. 42—65 **4 Claims**

1. An improved revolver hand and improved revolver hand spring in which the hand contains a circular transverse opening to accommodate a pivot pin, wherein the improvement comprises:

a. an internal open area within the hand adjacent said pivot

pin which accommodates a portion of the end of said hand spring which abuts said pivot pin;



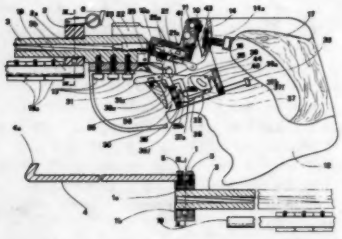
b. whereby the hand is allowed flexible but restricted longitudinal movement at the location of the internal open area.

4,397,111

PISTOL, IN PARTICULAR FOR OLYMPIC FIFTY METER COMPETITION SHOOTING

Cesare Morini, Via Trieste, 14 - Parma, Italy

Filed Nov. 17, 1980, Ser. No. 207,444
Int. Cl.³ F41C *3/00, 11/00, 19/00, 21/22*
U.S. Cl. 42—73 **10 Claims**



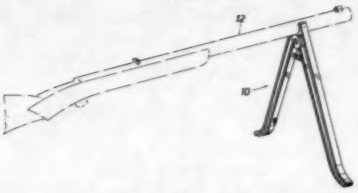
1. Pistol, in particular for Olympic fifty meter competition shooting, comprising a first support and a second support, a front sight mounted on said first support, a rear sight notch mounted on said second support, said pistol comprising a barrel, means to mount said first and second supports with said first sight and said rear sight mounted thereon, respectively, on said pistol barrel in a manner permitting said first and second supports to rotate around the axis of said barrel and to permit said first and second supports to be secured to said barrel at any selected position obtained by rotation of said supports about said barrel, said pistol comprising a frame, said frame consisting essentially of a drilled plate and a shaped fork, said pistol comprising a breech-block, means to mount said breech-block within said shaped fork, said pistol comprising a grip, means to mount said frame to said grip at any one of a plurality of angularly spaced separate positions all lying in essentially the same vertical plane, means to connect said barrel to said drilled plate at any one of a plurality of angularly spaced separate positions arranged in essentially the same horizontal plane, said pistol comprising firing mechanism, said firing mechanism comprising a trigger and a firing pin, and means for transmitting the motion of said trigger to said firing pin, and means to connect said firing mechanism to said grip of said pistol separately from the remaining elements of said pistol.

4,397,112

RIFLE BIPOD

Norman N. York, 3703 Broadway, Houston, Tex. 77017

Filed Mar. 23, 1981, Ser. No. 246,406
Int. Cl.³ F41C *29/00*
U.S. Cl. 42—94 **3 Claims**



1. A removable and detachable bipod for attachment to the barrel of a rifle, comprising:

(a) first and second similar legs joined together at a pivot pin and forced apart below said said pivot pin by a coil spring positioned between said legs to force said legs apart whereby the lower ends of said legs are deployed in spaced relation to enable a bipod support for the rifle;

(b) said legs including upper ends having arcuately curved protruding tabs thereon which are adapted to releasably reach around and grasp the barrel of the rifle;

(c) receptacles in said legs adapted to receive the ends of said coil spring which is compressed when inserted into said receptacles, and wherein said coil spring is permitted to elongate to force said legs of the bipod apart; and

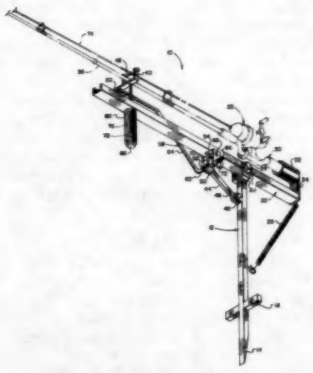
(d) interlocking tabs on said legs which tabs lock said legs together.

4,397,113

FISHING ROD HOLDER AND HOOK SETTING DEVICE

Paul I. Pinson, Box 67, Winnsboro, Tex. 75494

Filed Feb. 9, 1981, Ser. No. 232,669
Int. Cl.³ A01K *91/06*
U.S. Cl. 43—15 **8 Claims**



1. A fishing rod holder comprising, in combination:

a support member;

a fishing rod retainer pivotally mounted on said support member;

a spring coupled between said support member and said rod retainer for biasing said rod retainer for rotational movement;

a latch pivotally mounted on said support member for movement from a cocked position is which it is disposed in latched engagement with said fishing rod retainer and

wherein said spring is maintained in tension, to a trip position in which said latch is disengaged from said rod retainer and said spring tension is relieved;

a fishing rod guide bar coupled to said rod retainer for reciprocal motion transverse to said rod retainer; and,

a trigger arm rotatably coupled to said rod retainer and movably engagable on one end against said latch in the cocked position and carried on its opposite end by said guide bar.

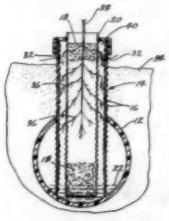
4,397,114
SOILESS GROWING SYSTEM

William A. Skaife, Solana Beach, Calif., assignor to Margaret R. Skaife, Trustee, Solana Beach, Calif.

Continuation-in-part of Ser. No. 169,673, Jul. 17, 1980, which is a continuation of Ser. No. 863,086, Dec. 22, 1977, which is a continuation of Ser. No. 704,190, Jul. 12, 1976, Pat. No. 4,100,699, which is a continuation-in-part of Ser. No. 693,637, Jun. 7, 1976, abandoned, which is a continuation of Ser. No. 577,863, May 15, 1975, Pat. No. 3,961,444. This application Jul. 23, 1980, Ser. No. 171,499

Int. Cl.³ A01G *25/00*

U.S. Cl. 47—81 **14 Claims**



1. A soiless growing system for all seeds and plants comprising:

an elongated water pipe horizontally disposed and continuously containing water, said pipe including a series of openings along its top side,

a plant support riser pipe positioned in each opening,

a perforated tube fitted with a growing medium means provided in each plant support riser pipe with the lower end of the perforated tube and growing medium means extending into the water in the water pipe,

said growing medium means having a water table with a saturation capillary fringe and a root zone thereabove, said growing medium means having large and small pores with enough pores of large enough size to limit the saturation capillary fringe from said water table to a small fraction of the height of the growing medium and enough pores of small enough size to hold sufficient moisture in said root zone to provide abundant water for seed and plant growth, air means in communication with the growing medium means to provide for continuous entry of oxygen and an escape of carbon dioxide to provide abundant oxygen for seed and plant growth, and

said riser plant support pipes are corrugated with annularly extending air passageways spaced along the length thereof and being in communication with the atmosphere to thereby provide air to said growing medium means through said perforated tube.

4,397,115
OVERHEAD DOOR

Jacob H. Crawford, Crawford Airport, Williston, Tenn. 38076

Filed Sep. 4, 1981, Ser. No. 299,775

Int. Cl.³ E06B *7/00*

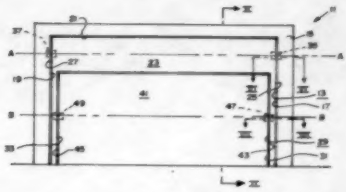
U.S. Cl. 49—70 **10 Claims**

1. An overhead door for selectively blocking an opening in a wall, the opening being defined in part by a first side edge and a second side edge, said door comprising:

(a) first door means having a first side and a second side and having an opening therein, said opening in said first door means being defined by a first side edge and a second side edge;

(b) first pivot means for pivotally mounting said first door means to the first and second side edge of the opening in the wall and for allowing said first door means to move between a substantially vertical closed position and a substantially horizontal opened position;

(c) second door means having a first side and a second side;



(d) second pivot means for pivotally mounting said second door means to said first and second side edges of said opening in said first door means and for allowing said second door means to move between a substantially vertical closed position and a substantially horizontal opened position; and

(e) tracking means for causing said second door means to move from said closed position substantially completely to said horizontal position when said first door means initially begins movement from said closed position toward said opened position and to maintain said horizontal position until said first door means has reached said opened position.

4,397,116
FIRE RESISTANT DOOR

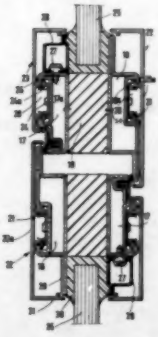
Siegfried Habicht, Leopoldshöhe, and Heinz Gerss, Bielefeld, both of Fed. Rep. of Germany, assignors to Schüco Heinz Schurmann GMBH & Co., Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,763

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948039; Nov. 29, 1979, 7933612[U]

Int. Cl.³ E06B *3/00*

U.S. Cl. 49—501 **14 Claims**



1. A fire-resistant door, comprising at least one swingable leaf including an inner frame comprised of two tubular steel sub-frames spaced from each other to form a space therebetween, a profile of fire and high temperature-resistant material clamped between said sub-frames; an outer frame of light metal

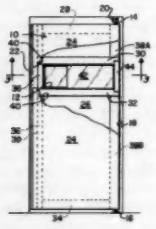
surrounding said inner frame and rigidly connected thereto; a glass plate having a general plane and an end portion located within said frames, said outer frame having lateral walls facing said tubular sub-frames, said sub-frames having wall portions extended parallel to said general plane and spaced from said lateral walls such that anchoring grooves are formed between said lateral walls and said wall portions; and supporting elements each rigidly supported in the respective anchoring groove and provided with arresting projections, said lateral walls of the outer frame being formed with arresting webs extending in said grooves towards said wall portions and engaging said arresting projections of the supporting elements in a force and form-locking connection.

4,397,117

DOOR WITH REMOVABLE SHEET

Earl H. Shipp, Bedford, Mass., assignor to Eckel Industries, Inc., Cambridge, Mass.

Filed Nov. 19, 1981, Ser. No. 322,772
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—501 **10 Claims**



1. A door comprising in combination:

a pair of similar spaced apart in parallel confronting relationship to one another so as to form an interior compartment therebetween, said compartment communicating with the exterior of said door through an edge of the door;

a pane of transparent material shaped and dimensioned to slidably fit into said compartment so that the pane may be reversed in the compartment; and

a window opening having an area less than half that of said pane in each of said panels, said openings being in line with one another and and a portion of said pane so as to permit vision therethrough and further being aligned eccentrically with regard to said compartment so as to conceal a symmetrically disposed similar portion of said pane.

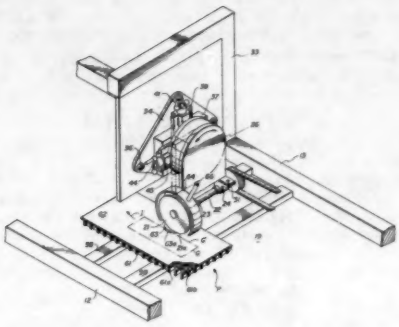
4,397,118

GLASS BEVELING APPARATUS

Noel Cleckler, 1457 Westmoreland St., Abilene, Tex. 79603

Filed Jan. 12, 1981, Ser. No. 224,201
Int. Cl.³ B24B *9/10*
U.S. Cl. 51—74 R **9 Claims**

1. An apparatus for manually beveling a sheet of glass comprising, in combination, a frame, a grinding wheel, means for supporting said grinding wheel on said frame for axial rotation, drive means on said frame for rotating said grinding wheel said drive means including a motor means remotely spaced from said grinding wheel and connected thereto by belt means, a substantially planar support plate disposed on said frame in underlying relationship with a peripheral edge of said grinding wheel for slidably supporting a sheet of glass to be beveled, means for adjusting the axial position of said grinding wheel relative to said support plate, a guide member on the upper surface of said support plate for guiding engagement with a marginal edge of said sheet of glass during sliding movement of said sheet of glass on said support plate with said grinding wheel peripheral edge in grinding engagement with the marginal edge of said glass sheet to thereby provide a beveled marginal edge on said glass sheet during said sliding movement. wherein said support plate comprises a substantially rectangular grid member of rigid material and a cover member



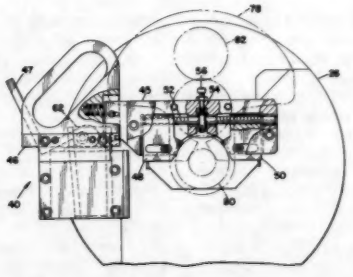
of elastomeric material disposed on the upper surface of said grid member and wherein said guide member is substantially disc shaped having a peripheral edge adapted to engage the edge of the glass sheet to be beveled.

4,397,119

ADJUSTABLE CRANKPIN LOCATORS FOR A CRANKSHAFT GRINDING MACHINE

Peter J. Valinski, Sr., Worcester, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Feb. 24, 1981, Ser. No. 238,393
Int. Cl.³ B24B *49/00*
U.S. Cl. 51—165 R **3 Claims**



1. An adjustable vee block assembly for angular locating the crankpin of a crankshaft which is supported in a grinding machine comprising:

a main body portion;

a first vee side member, having a threaded opening formed therein, supported on said main body portion for rectilinear movement;

a second vee side member, having a threaded opening formed therein and spaced apart from said first side member, supported on said main body portion for rectilinear movement;

an elongated rotatable position adjusting member having a left-hand thread on one end and a right-hand thread on the other end disposed between and engaging the threaded openings in said first vee side member and said second vee side member for relative positioning thereof;

a locking member for engaging and locking said elongated rotatable position adjusting member against rotation for

maintaining said first vee side member and said second vee side member at a selected position; and

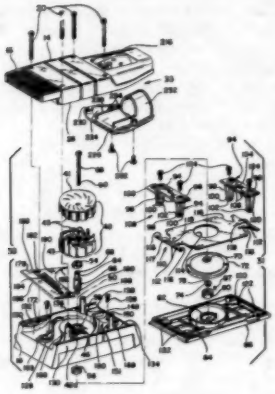
a support bracket, securely attached to the grinding machine, for receiving a portion of said main body portion and supporting the locked first and second vee blocks in position for angular locating a crankpin on the crankshaft.

4,397,120

SUSPENSION SYSTEM FOR AN ABRADING TOOL

Colin Overy, and Anthony J. Langenberg, both of Brockville, Canada, assignors to Black & Decker Inc., Newark, Del.

Filed Sep. 1, 1981, Ser. No. 298,310
Int. Cl.³ B24B *23/00*
U.S. Cl. 51—170 MT **16 Claims**



1. A platen support subassembly for a pad sander having a housing, comprising:

(a) a one-piece body having a cross-member and a pair of flexible posts extending outwardly from the cross-member;

(b) the housing including a mounting member defining a locking aperture and engageable with the one-piece body;

(c) the body cross-member having a resilient snap formed thereon; and

(d) the resilient snap engaging the mounting member locking aperture to secure the body to the housing.

4,397,121

METHOD AND APPARATUS FOR REDUCING THE RATE OF HEAT TRANSFER

Howard L. Dunsmore, P.O. Box 13651, Reno, Nev. 89507

Continuation-in-part of Ser. No. 928,866, Jul. 28, 1978, Pat. No. 4,224,771. This application Sep. 29, 1980, Ser. No. 191,904
The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.
Int. Cl.³ E04B *1/62;* E06B *7/02, 7/12*
U.S. Cl. 52—1 **24 Claims**

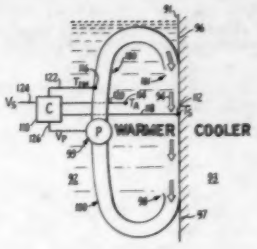
1. Apparatus for reducing the rate of heat transfer from a constrained heat loss surface to a fluid in contact therewith, comprising:

a collector mounted adjacent to the heat loss surface and formed for intercepting fluid displaced along said surface by forces acting in the direction of said collector in accordance with heat loss from said surface into said fluid;

a distributor mounted adjacent to said heat loss surface in spaced relation to said collector and formed for discharging fluid for displacement along said surface to said collector;

recirculating means formed for removing fluid from said collector and supplying such fluid to said distributor; and

recirculation rate control means for so controlling the rate at which said recirculating means removes said fluid from said collector and supplies it to said distributor that the temperature of the recirculating fluid tends to approach a temperature intermediate between the temperature of said heat loss surface and the temperature of said fluid at which, for at



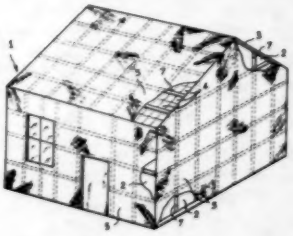
least some temperature differentials between said heat loss surface and said fluid, said rate of heat transfer is less than that which is achieved when said recirculating means is operated at a fixed rate.

4,397,122

METHOD AND A COVERING FOR HEAT INSULATION AND PROTECTION OF A CONSTRUCTION

Jacques Cros, Cambon, 81210 Roquecourbe, France

Division of Ser. No. 14,210, Feb. 22, 1979, Pat. No. 4,283,888. This application Oct. 14, 1980, Ser. No. 196,313
Claims priority, application France, Mar. 7, 1978, 78 06426
The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.
Int. Cl.³ E04B *1/34, 1/74;* A01G *9/00*
U.S. Cl. 52—3 **3 Claims**



1. A greenhouse comprising a frame and, substantially covering the frame, a translucent open-mesh knitted fabric of glass fiber threads, said meshes being substantially two to six times the diameter of said threads, said knitted fabric being directly in contact with the ambient atmosphere and with the interior of said greenhouse, said meshes inducing a greenhouse effect in the interior of said greenhouse while at the same time permitting a controlled and substantially uniform circulation of air in the interior of the greenhouse so as to avoid condensation of moisture in the interior of the greenhouse.

4,397,123

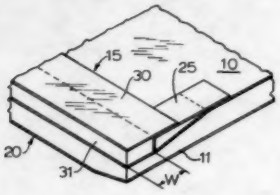
DRYWALL BOARD CONSTRUCTION

Robert F. Parker, Rt. 5, Box 350, Wilmington, N.C. 28401

Filed Jan. 29, 1981, Ser. No. 229,312
Int. Cl.³ E04C *1/36*
U.S. Cl. 52—100 **5 Claims**

1. A drywall panel board of rectangular shape formed of paper wrapped core material and having front and back faces defined by long and short edges, said edges being character-

ized by the long edges being tapered on the front face marginal portions thereof enabling pairs of boards of such construction to be secured with the front faces exposed and with one long edge of each abutted together to form an inwardly tapered recess along the join line of the abutted long edges suitable for receiving finishing material therein, and with the short edges having bendable marginal portions throughout the length and on the back face thereof, said marginal portion of each said short edge including a first removable rectangular strip on the



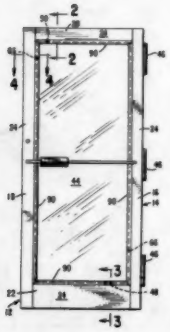
back face of the board and formed of paper wrapped core material with a tear strip secured thereto and to the body of said board enabling other pairs of boards of such construction to be secured to common framing members with the front faces exposed and with one short edge of each abutted and with the marginal portions of each such abutted short edge secured and with said rectangular strips removed to allow inward bending whereby to form an inwardly tapered recess along the join line of the abutted short edges also suitable for receiving finishing material therein.

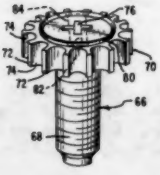
4,397,124

GLASS JACKS FOR DOORS, WINDOWS, WALLS, ETC.

Ronald E. Redman, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Jun. 10, 1981, Ser. No. 272,113
Int. Cl.³ E06B *3/00*
U.S. Cl. 52—126.4 **33 Claims**





1. A door construction comprising:

a rectangular frame having interconnected stiles and rails providing one or more rectangular openings for receiving panels;

a panel mounted in said opening having outer peripheral edges closely facing adjacent surfaces of said frame; and

one or more jacks extending between an edge of said panel and an adjacent facing surface of said frame for maintaining adjustable selected spacing between said edge and said adjacent facing frame surface,

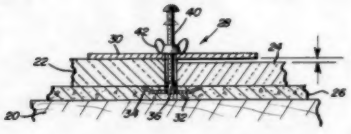
said jack including an elongated threaded shank adapted to be mounted in threaded engagement in an opening formed in said adjacent facing frame surface for movement normal thereto upon rotation of said shank to provide adjustment of said spacing and a head extending radially outward of said shank having an end surface adapted to engage said edge of said panel, said head having a peripheral edge surface with ribs and grooves thereon to facilitate manual rotation thereof for adjusting said spacing and annular rib means on said end surface of said head having a diameter greater than thickness of said panel and deformable in portions engaged against said edge of said panel thereby forming stops engaging corners on opposite faces of said panel adjacent said edge for resisting inadvertent rotation of said jack after said selected spacing is attained.

4,397,125

SYSTEM FOR ALIGNING UNEVEN THICKNESS PANEL SECTIONS

Ova L. Gussler, Jr., 5045 Maid Marian Ct., Ashland, Ky. 41101

Filed Jun. 4, 1980, Ser. No. 156,385
Int. Cl.³ E04F *13/08*
U.S. Cl. 52—127.3 **13 Claims**



1. In combination with a support surface over which a plurality of individual side-by-side slightly spaced apart panel members are supported in a floating manner upon a variable thickness layer of attaching material disposed on said surface between the latter and said panel members, a system for alignment of said panel members whereby front surfaces thereof opposite the rear surfaces of the panel members contacting said attaching material may be positioned in substantially coplanar relation, said system including a first pressure member having front and rear sides corresponding to said front and rear surfaces including a central portion and remote portions spaced apart on opposite sides of said central portion, said first pressure member being disposed to the rear of adjacent marginal portions of said panel members with said front side facing forwardly and said remote portions registered with the rear surfaces of said adjacent panel members spaced from said adjacent marginal portions and said central portion registered with the space between said adjacent marginal portions of said adjacent panel members, a second pressure member overlying and including abutment surfaces abuttingly opposing adjacent front surface portions of said adjacent panel member marginal portions, and elongated connecting means operatively connected between said central portion and a central area of said second pressure member, extending through said space and operative to adjustably draw said central portion toward said second pressure member, said remote portions being resiliently supported from said central portion and yieldingly resisting movement thereof, relative to said central portion, in a direction away from said second pressure member, said system being supported entirely from said adjacent panel members.

4,397,126

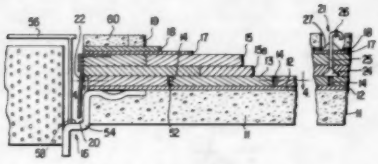
ENVIRONMENTALLY ADAPTABLE ROOF STRUCTURE

Nyal E. Nelson, 12205 Thoroughbred Rd., Herndon, Va. 22070

Continuation-in-part of Ser. No. 13,109, Feb. 21, 1979. This application Jun. 30, 1980, Ser. No. 164,490

Int. Cl.³ E04B *7/00*

U.S. Cl. 52—199 **17 Claims**



1. A composite roof structure comprising:
(a) a lower water-vapor impermeable layer;
(b) at least one layer of insulation overlaying said lower water-vapor impermeable layer;
(c) an upper water-vapor impermeable layer overlaying said at least one layer of insulation, said upper and lower water-vapor impermeable layers being sealed together along the roof structure perimeter;
(d) at least one roof drain; and
(e) at least one water vent for venting water-vapor and water-liquid from said at least one insulation layer to the ambient atmosphere, said water vent being manually closeable to form a water vapor tight envelope around said at least one insulation layer and manually operable to allow water vapor within said envelope to escape, said at least one water vent cooperating with said at least one roof drain such that water-liquid exiting said at least one water vent enters said at least one roof drain.

4,397,127

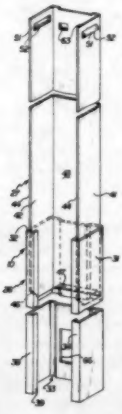
EXTENDABLE STUD FOR PARTITION WALLS OR THE LIKE

David F. Mieyal, Strongsville, Ohio, assignor to Donn, Incorporated, Westlake, Ohio

Filed Sep. 22, 1980, Ser. No. 189,128

Int. Cl.³ E04H *1/00*

U.S. Cl. 52—241 **23 Claims**



1. A stud assembly for use in walls between floor and ceiling tracks, comprising a stud member providing opposed panel-engaging portions, a stud extension member shaped to telescope with said stud member, one of said members providing lock means operable to lock with one of said tracks in response to lengthwise movement of said one member relative to said one track and retain said members interlocked as the other of said members is moved to engage the other of said tracks, said members having an assembled length when fully telescoped which is less than the spacing between said tracks, said lock means permitting locking of said one member at substantially any location along the length of said one track and movement of said one member along said one track while said locking means remains locked.

4,397,128

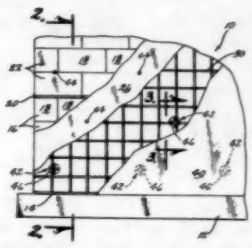
REINFORCED MASONRY WALL STRUCTURE

Amde M. Wolde-Tinsae, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 17, 1981, Ser. No. 234,690

Int. Cl.³ E04B *1/16, 5/08;* **E04F** *13/04*

U.S. Cl. 52—293 **10 Claims**



1. A reinforced masonry wall structure, comprising,
a horizontally disposed footing,
a first layer of mortar on the upper surface of said footing,
a first plurality of courses of masonry blocks placed one upon the other with the lowermost course being positioned on the said first layer of mortar, said masonry blocks in said first plurality of courses being in intimate contact with each other,
a second layer of mortar on the upper portion of the uppermost course of said first plurality of courses,
a second plurality of courses of masonry blocks placed one upon the other in the vertical plane of the first plurality of courses with the lowermost course of said second plurality of courses being positioned on the said second layer of mortar, said masonry blocks in said second plurality of courses being in intimate contact with each other,
a first layer of plaster-like material on one side of said masonry blocks,
a second layer of plaster-like material on the other side of said masonry blocks,
a third layer of plaster-like material positioned on said first layer,
a fourth layer of plaster-like material positioned on said second layer,
a wire fabric material between said first and third layers of plaster-like material,
and a wire fabric material between said second and fourth layers of plaster-like material.

4,397,129

RESURFACING CONSTRUCTION

John K. Kough, Morgan Hill, Calif., and Otis M. Martin, 433 Chateau La Salle, San Jose, Calif. 95111, assignors to Otis M. Martin, San Jose, Calif.

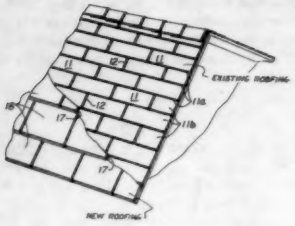
Filed Apr. 20, 1981, Ser. No. 255,422

Int. Cl.³ E04D *1/12*

U.S. Cl. 52—528 **3 Claims**

1. An arrangement of resurfacing assemblies adapted for

installation on top of a roof or siding that has a shingled outer surface, each assembly comprising a sheet of flexible water proof material having upper and lower margins, and a nailing strip, each sheet being positionable over the existing shingled



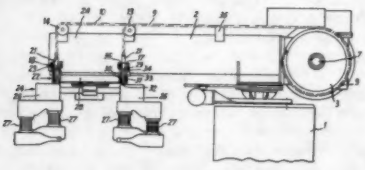
surface with the lower margin overlying the upper margin of the sheet in the assembly next below, and its upper margin underlying the lower margin of the sheet in the assembly next above and abutting against the bottom edge of shingles in the existing roof as a guide line for installation purposes.

4,397,130

MACHINE FOR LOADING AND UNLOADING CONTAINERS OF ARTICLES ARRANGED IN ROWS

Michel Thierion, Muizon, 51140 Jonchery-sur-Vesle, France

Filed May 7, 1981, Ser. No. 261,563
Claims priority, application France, May 12, 1980, 80 10600
Int. Cl.³ B65B *5/06, 5/10*
U.S. Cl. 53—77 **8 Claims**



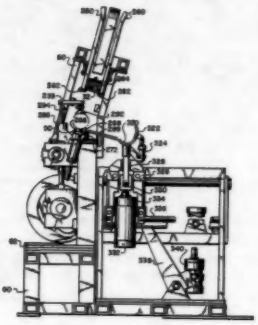
1. A machine for loading and unloading containers of articles arranged in rows by transferring said articles between a first station outside said containers and a second station inside a container, said machine comprising a vertical support adjacent said first and second stations; an arm mounted on said support and pivotable through 90° between a first position in which one end of said arm lies over said first station and a second position in which said one end of said arm lies over said second station; four first pulleys on said arm; respective chains around said first pulleys, paid out and wound in sychronously by the rotation of said first pulleys, said chains extending to said one end of said arm and then downwardly; respective apertures in said arm through which said downwardly extending chains pass; a platform moveable vertically; suckers for manipulating said articles mounted on said platform; respective first chain tension detector means and at least two centering means on said platform, operative with said platform in its highest position; respective components on said platform to which said chains are attached via said first chain tension detector and centering means; and second chain tension detector means disposed on the path of said chains to monitor the tension in said chains.

4,397,131

AUTOMATIC BAGGING SYSTEM FOR CAN ENDS

Gerald R. Anderson, York, Pa., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 28, 1981, Ser. No. 229,299
Int. Cl.³ B65B *43/30, 39/00*
U.S. Cl. 53—254 **1 Claim**



1. Apparatus for bagging can ends comprising:

(a) a frame;

(b) a magazine mounting on said frame for holding a supply of flattened bags, said magazine including upright guides and ledges to support said bags;

(c) a bagging table, mounted for reciprocation on said frame, said table comprising a forward leaf and a rearward leaf said leave being provided with vacuum ports and hinged together wherein said leaves may assume a normally open attitude with an included angle substantially equal to 180 degrees and wherein said leaves may be inclined to reduce said angle to less than 180 degrees and wherein said table addresses said magazine with said leaves in said open attitude to vacuumly engage the underside of the lowermost bag of said magazine;

(d) inclining means disposed on said frame proximate a bagging plane to engage said hinged leaves and incline said leaves one toward the other;

(e) lifting means, mounted on said frame for periodic elevation and lowering of said table wherein said table may be elevated to vacuum strip said bag from said magazine and lower said bag to said plane wherein said inclining means engages said table leaves to open said bag;

(f) a bag pick up with a vacuum head mounted on said frame for periodic reciprocation in synchronized movement with said table, wherein said vacuum head is caused to descend proximate to said plane to vacuumly engage the upper side of said bag and to cooperate with said leaves to hold open the mouth of said bag and wherein said bag pick up further comprises means for rocking said pick up out of the path for said ascending table; and

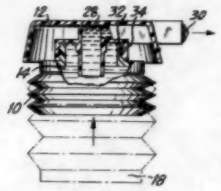
(g) a bagging horn mounted on said frame proximate said plane for periodic horizontal reciprocation in synchronized movement with said table and said pick up wherein said horn may be advanced into or out of said opened bag in cooperation with said table and said pick up to hold said bag open for receipt of said can ends.

4,397,132

METHOD FOR MANUFACTURING A CONTAINER ASSEMBLY FOR STORING AND DISPENSING FLUID MATERIALS

Greg Pardes, New York; Richard F. Berger, Huntington, and Bernard R. Gerber, Jamaica, all of N.Y., assignors to The Reseal Container Corporation of America

Filed May 1, 1981, Ser. No. 259,495
Int. Cl.³ B65B 3/16, 3/24
U.S. Cl. 53—471 9 Claims



1. A method for manufacturing a container assembly for storing and dispensing fluid material, said container assembly including: a collapsible resilient container adapted to be stretched and collapsed from an initial nominal position; said container being adapted to contain therein said fluid material to be stored and dispensed with dispensing of said fluid material being effected by compression of said collapsible container from said initial nominal position toward said collapsed position to diminish the internal volume thereof; an upper neck portion formed as part of said container; a lower grip portion; a cap member adapted to be placed in sealing engagement with said neck portion, said cap member defining a dispensing flow conduit which is in direct flow communication with the interior of said container when said cap member is placed in sealing engagement with said neck portion; and check valve means mounted in said cap member located at the outlet end of said dispensing flow conduit to enable fluid flow therethrough in one direction only, said check valve means being normally closed and operating to automatically respond to increased pressure in the fluid material in said container when said container is compressed to open said dispensing flow conduit to permit flow of dispensed fluid therethrough during collapsing of said container and to automatically respond to cessation in the compressing of said container to return to said normally closed condition to seal said dispensing flow conduit; said method comprising the steps of gripping said container about said neck portion and said lower grip portion, stretching said container from said initial nominal position to increase the internal volume thereof, filling said container with a fluid material to be stored therein and dispensed therefrom, attaching said cap member to said container by connecting said cap member in operative engagement with said upper neck portion after said container has been filled with said fluid material, and thereafter releasing said neck portion and said lower grip portion of said container to allow said container to return to said initial nominal position whereby a quantity of the fluid material stored therein is caused to be emitted from said check valve means thereby to completely fill said dispensing flow conduit in said cap member with said fluid material to be dispensed.

4,397,133

FILL AND SEAL MACHINES

Ronald W. Hume, Clearwater, Fla., assignor to Lykes Pasco Packing Company, Zephyrhills, Fla.

Filed Sep. 19, 1980, Ser. No. 188,839
Int. Cl.³ B65B 7/28
U.S. Cl. 53—485 6 Claims

1. A machine for successively charging a plurality of containers with a predetermined quantity of fluid and for sealingly attaching closures to the containers to inhibit spilling of the fluid, comprising:

a machine housing;

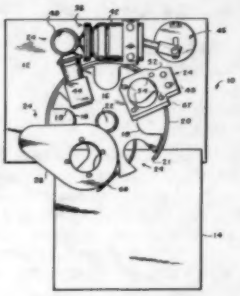
a first, second and third work station disposed along a predetermined path relative to said machine housing;

carrier means for carrying the containers in timed sequence between said work stations;

said first work station including means for successively delivering individual containers to said carrier means;

said second work station including means for successively charging individual containers with a predetermined quantity of fluid;

said third work station includes a gravity feed for successively supplying closures to the containers and means for sealingly attaching the closures to the containers;



said third work station comprising a fixed position closure magazine for retaining a plurality of closures in a stacked relationship with one closure resting upon another closure;

means establishing the longitudinal axis of said closure magazine at a relatively small angle relative to the vertical with the lowermost portion of the bottom closure in said closure magazine being in path-interruptive relation with the uppermost portion of the container on said carrier means; and

said uppermost portion of the container engaging the stationary lowermost portion of the bottom closure enabling the closure to be withdrawn from said closure magazine and to be secured to the container upon movement of the container by said carrier means.

4,397,134

ROW CROP ATTACHMENT WITH SWEEPER CHAIN

H. Nevin Lausch, Denver, and Edward H. Priepke, Lancaster, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Oct. 16, 1981, Ser. No. 312,029
Int. Cl.³ A01D 45/02
U.S. Cl. 56—98 6 Claims

1. A row crop attachment for cutting and gathering stalk type crops planted in rows, said attachment comprising:

a frame;

a plurality of row crop dividers connected to said frame extending in side-by-side relationship forming a row crop path therebetween;

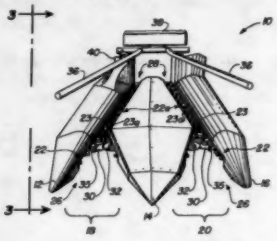
a floor connected to said frame extending from a first to a second end of said path;

a drive shaft connected to said frame;

a pair of crop gripping and gathering members movably mounted in adjacent ones of said row crop dividers, said gripping and gathering members comprising first and second endless chains from which extend a plurality of lugs and being supported by a plurality of shafts and sprockets driven by said drive shaft, said lugs being in

intermeshing relationship to grip crop stalks moving along said path;

a sweeping member movably mounted in one of said row crop dividers, said sweeping member supported by shafts which support one of said gripping and gathering members, said sweeping member having less lugs than said gripping and gathering members, said sweeping member being mounted between said floor and said gripping and gathering members; and



a pair of rotary knives mounted on adjacent ones of said shafts, each of said adjacent shafts supporting one of said gripping and gathering members, one of said knives being mounted on the same shaft which supports one of said gripping and gathering members and said sweeping member, said knives being positioned adjacent said floor at one end of said path to sever row crop material that comes in contact therewith.

4,397,135

FORKLESS HAYMAKING MACHINE

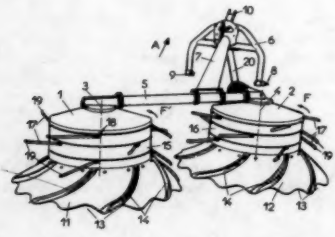
Albert Wattron, Schwenheim, France, assignor to Belrecolt S.A., Marmoutier, France

Filed Sep. 16, 1980, Ser. No. 187,806

Claims priority, application France, Sep. 18, 1979, 79 23659

Int. Cl.³ A01D *81/00*

U.S. Cl. 56—377 **10 Claims**



1. A haymaking machine for the windrowing, tedding or turning of crops,

comprising in combination:

at least one drum rotatable about an upright axis,

a flexible and deformable skirt arranged to follow the contour of the ground and being connected near the bottom of said drum for sweeping up the crop to carry it on its upper surface, and

a plurality of rigid, outwardly extending arms rigidly secured to the exterior of said drum above said skirt to aid in displacing the crop, each arm having a length at least 20% of the drum radius,

said arms being disposed on different drum levels,

and wherein the extremeties of the arms disposed at the lowest level on said drum are operatively disposed at least 5 centimeters from the ground during a front portion of their trajectory, as defined with respect to a forward movement of the haymaking machine.

4,397,136

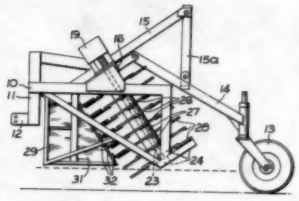
AGRICULTURAL SLASHER

Leon G. McLeod, 5 Frangela Dr., Murwillumbah, Australia (2484)

Continuation of Ser. No. 19,044, Mar. 9, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,515

Int. Cl.³ A01D *49/00*

U.S. Cl. 56—500 **9 Claims**



1. An agricultural slasher of the type having a tractor-mounted main frame, a cutter shaft mounted rotatably on the frame, means for driving the cutter shaft, and a series or rotary cutters on the cutter shaft, wherein:

the cutter shaft inclines upwardly from bottom to top in the direction of travel so as to permit branches of a plant to be cut into relatively small pieces before a trunk of the plant is cut through,

the rotary cutters comprise blades radiating, at axially spaced intervals, from the cutter shaft and being unguarded and fully exposed around the entire circumference thereof, the lowermost cutters of said series of rotary cutters extending below the main frame on which fixed cutters are mounted so as not to coact with said fixed cutters, at least one bottom cutter of said lowermost cutters being positioned on said shaft so as to penetrate the earth during rotation thereof thereby serving to cut roots of the plant, said at least one bottom cutter being provided with a greater number of blades than the cutters mounted thereabove,

the blades of the rotary cutters, other than said lowermost cutters, being positioned to pass closely adjacent said fixed cutters and coacting therewith when the cutter shaft is driven to finely chop the plant including the trunk.

4,397,137

PNEUMATIC YARN SPLICING

Gerald B. Davies, Pontypool, and Roger J. Shea, Monmouth, both of Wales, assignors to Pentwyn Precision, Ltd., United Kingdom

Filed Jun. 9, 1981, Ser. No. 271,994

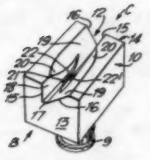
Claims priority, application United Kingdom, Jun. 10, 1980, 8018947; European Pat. Off., Jun. 2, 1981, 81302446.0

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **13 Claims**

1. A yarn splicing chamber for use in pneumatic yarn splicing apparatus, comprising a block for receiving the ends of the yarns to be spliced having a longitudinal channel of asymmetrical configuration about its axis and being open at its top, inlet means for the admission of gas under pressure to the channel, and means for sealing said channel at the top thereof to form

outlets at opposed ends of said channel, whereby a vortex flow having a predominant direction of rotation is created in gas



admitted through the inlet means as it passes towards said outlets to be exhausted therefrom.

4,397,138

METHOD AND DEVICE FOR JOINING TEXTILE THREADS BY SPLICING WITH THE AID OF COMPRESSED AIR

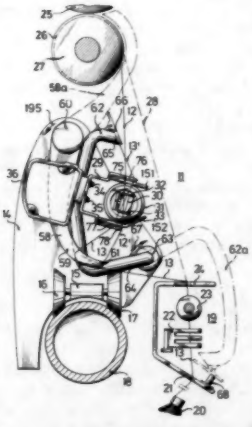
Joachim Rohner; Heinz Zumfeld, and Ivica Romic, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,224

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029431; Aug. 2, 1980, 3029452; Apr. 8, 1981, 3114160

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **23 Claims**



1. Method of joining textile threads, respectively, formed of a plurality of twisted-together filaments by splicing the threads with the aid of compressed air, the threads being inserted into a splicing chamber having a compressed-air channel communicating therewith, the threads being fed from two sides of the splicing chamber and being held by respective thread holding members, which comprises, prior to splicing the threads, freeing the threads of the twist formed therein in a region thereof at which the splicing connection is to be formed, transferring the twist of the threads out of the region at which the splicing connection is to be formed and into a region of the threads extending from the splicing chamber to the thread holding members and, after splicing the threads, releasing the twist so that it can return to the splice location.

4,397,139

CONTROLLED COMPRESSED AIR SPLICING DEVICE

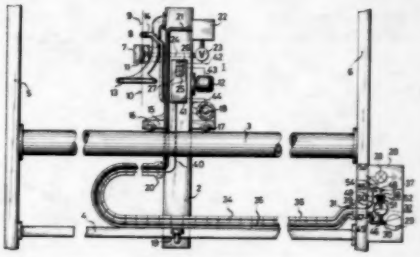
Edmund Wey, Nettetal; Gregor Kathke, Viersen; Herbert Knors, and Klaus Rosen, both of Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 1, 1981, Ser. No. 298,524

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 3033050

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **1 Claim**



1. Controlled compressed-air splicing device for textile threads with a controlled compressed-air metering valve supplied from a compressed-air supply device, comprising an automatic quality control device for ensuring the quality of spliced joints formed by the splicing device, said quality control device comprising a pressure monitor having an adjusting device for at least one of a minimum pressure, on the one hand, and tolerance limits of a pressure range, on the other hand, said pressure monitor communicating with the compressed-air supply device and being operatively connected to at least one device of a locking device for locking the compressed-air splicing device and an alarm device for signaling when the pressure deviates from a given pressure.

4,397,140

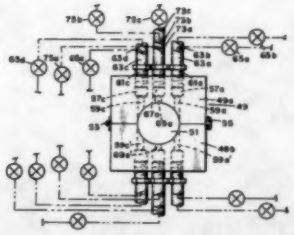
METHOD AND APPARATUS FOR SPLICING YARNS AND TOW

Richard W. Sheehan, and Willys D. Burnett, both of Johnson City, Tenn., assignors to Sherwood Research Corporation, Johnson City, Tenn.

Filed Sep. 9, 1981, Ser. No. 300,650

Int. Cl.³ B65H *69/06*; D02J *1/08*

U.S. Cl. 57—22 **8 Claims**



1. A splicing device for splicing overlapped multi-filament yarn and tow comprising means defining a generally cylindrical passageway having open ends and dimensioned to contain

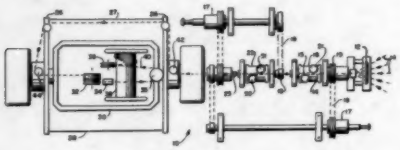
overlapped ends of the yarn or tow and through which overlapped ends may be passed, a first orifice in the wall of said passageway for directing a jet of gaseous fluid perpendicular to the axis of said passageway and into the approximate center of the yarn or tow so that the filaments of the yarn or tow are subjected to forces which cause some of them to move transversely in said passageway, and a second orifice in the wall of said passageway for directing a jet of gaseous fluid tangentially around said cylindrical passageway and generally tangentially to the surface of the yarn or tow so that filaments of the yarn or tow are subjected to forces which cause at least some of the filaments to rotate about the axis of said passageway.

4,397,141

METHOD AND APPARATUS FOR MAKING BALANCED METALLIC STRAND

William A. Gurecki, and Lester A. Bartell, both of Rome, N.Y., assignors to National-Standard Company, Niles, Mich.

Filed Apr. 15, 1981, Ser. No. 254,303
Int. Cl.³ D07B *1/06, 3/00, 3/12*
U.S. Cl. 57—58.59 **7 Claims**



1. A device for assembling a balanced finished strand from a plurality of filaments, including in combination:

double twist buncher means having a stationary cradle including haul-off and spooling means and further having means to revolve said strand in partially completed condition around said stationary cradle,

a twisting flyer, and

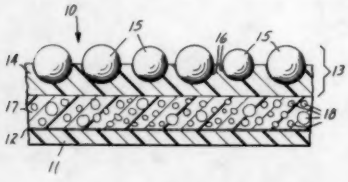
an over twist flyer positioned adjacent said twisting flyer outside of said stationary cradle, and wherein said double twist buncher means, said over twist flyer, and said twisting flyer are driven by a common source.

4,397,142

CODED THREADS AND SHEET MATERIAL USEFUL FOR MAKING SUCH CODED THREADS

Wallace K. Bingham, North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 7, 1981, Ser. No. 327,803
Int. Cl.³ D02G *3/06*
U.S. Cl. 57—238 **15 Claims**



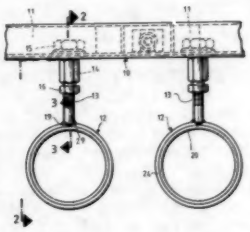
1. A set of sheet materials for preparing distinctly coded threads useful in counterfeit-inhibiting garments, each sheet material comprising a monolayer of transparent microspheres optically exposed at the front of said sheet material, a specularly reflective layer underlying the microspheres at the approximate point where the microspheres focus light that is incident on the front of said sheet material, and a polymeric layer underlying the specularly reflective layer and containing particulate matter dispersed therein, the composition of the particulate material in each distinct sheet material of the set differing in a predetermined manner from the composition of the particulate material in all other sheet materials of the set, and the different compositions providing coded information which may be read by an observer to identify the sheet material and a thread made from the sheet material.

4,397,143

LUBRICATING SYSTEM FOR ANTI-BALLOONING RINGS OF TEXTILE MACHINES

Konrad Klein, Ebersbach-Sulpach, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Nov. 13, 1981, Ser. No. 321,072
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043214
Int. Cl.³ D01H *13/12, 13/04, 7/62*
U.S. Cl. 57—355 **7 Claims**



1. In a textile machine wherein a yarn orbiting about an upright axis descends within an anti-ballooning ring restricting radial excursions of the yarn,

the combination with said ring of a supply of liquid lubricant and conduit means extending from said supply to an outlet at an inner surface of said ring, said inner surface being divided into a lower annular contact zone of convex curvature in an axial plane and a radially recessed upper zone, said outlet being disposed in said upper zone at a location set back from the path of a yarn body hugging said contact zone but swept by fiber ends protruding radially outward from said yarn body whereby lubricant picked up by said fiber ends is conveyed to said contact zone.

4,397,144

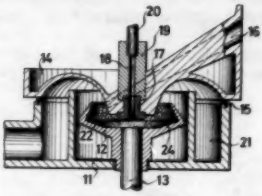
OPEN-END SPINNING DEVICE

Hans Raasch, Monchen-Gladbach; Jakob Lenzen, Korschenbroich, and Klaus Pohl, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,371
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016675
Int. Cl.³ D01H *1/135*
U.S. Cl. 57—414 **12 Claims**

1. Open-end spinning device, comprising a rotor housing, a spinning rotor being disposed in said rotor housing and having a pot-shaped inner surface, a housing cover having a fiber feeding channel formed therein, a thread delivery orifice being at least partly disposed in said cover and having a hard and wear-resistant material surface at thread deflection locations,

and a surface layer of wear-resistant material completely covering said pot-shaped inner surface of said spinning rotor and



being disposed on said thread delivery orifice, said surface layer having areas of different wearability distributed therein.

4,397,145

UNIVERSAL LINK CHAIN

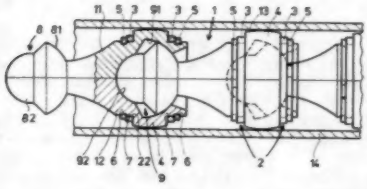
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 1, 1981, Ser. No. 268,729

Claims priority, application Switzerland, Jun. 6, 1980, 4381/80

Int. Cl.³ F16G *13/20*

U.S. Cl. 59—78 **11 Claims**



1. A universal link chain arrangement comprising:

a plurality of chain link elements, each of said chain link elements possessing at one end a ball pivot body and at the other end a ball socket adapted to receive the ball pivot body of the directly neighboring chain link element, each of said chain link elements being subdivided in an axial plane into two separate halves and possessing a first ring connection located at the end region of the ball socket, said ball pivot body having an undercut portion of hemispherical shape, said ball socket being surrounded by a second ring connection located at the region of said undercut portion of the directly neighboring chain link element, both of said ring connections being retainer rings spaced axially out of contact from each other and fittingly bearing on counter surfaces of the ball socket, whereby the retainer rings may be slid over the two halves from opposite end regions of the ball socket.

4,397,146

GAS TURBINE

Zoltan Vigh, Anaheim, Calif., assignor to Zepco, Inc., Lincoln, Nebr.

Division of Ser. No. 43,320, May 29, 1979, Pat. No. 4,347,034. This application May 28, 1981, Ser. No. 268,066

Int. Cl.³ F02C *3/00, 3/14*

U.S. Cl. 60—39.75 **10 Claims**

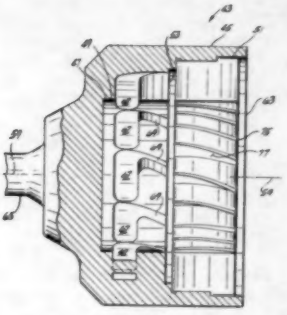
1. A rotary gas turbine comprising:

a rotor having an interior surface defining a first chamber and a second chamber therein for a stator, and a shoulder between said chambers; and

a stator positioned in the first and second chambers and having a wall;

each of said chambers having a periphery which is a surface of revolution about an axis extending through the chamber, the second chamber being of a diameter larger than that of the first chamber and being open at its end opposite the shoulder, the shoulder of the rotor constituting an annular surface around the axis;

the rotor being mounted for rotation about the stator on said axis; said interior surface of the rotor defining said first chamber being in rotary sealing relationship with the periphery of said stator and the shoulder of the rotor being in rotary sealing relationship with said wall, said rotor further having a plurality of recesses spaced at equal



intervals around the periphery of said first chamber, each recess extending radially outwardly into said rotor from said interior surface of the rotor defining said first chamber and having a passage extending to said shoulder of the rotor;

said stator having a port for gas under pressure for directing the gas into the recesses in the rotor at an angle for propulsion of the rotor;

said wall on the stator being adapted to block each of said passages at said shoulder of the rotor throughout a part of a revolution of the rotor to hold gas in the recesses for compression and said wall being ported for exit of gas from each recess via the respective passage as the rotor rotates through another part of its revolution for expansion of the gas and resultant impulsing of the rotor.

4,397,147

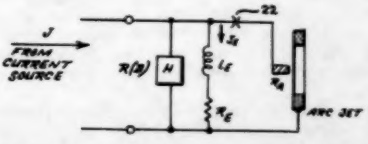
POWER CIRCUIT UTILIZING SELF EXCITED HALL EFFECT SWITCH MEANS

Peter J. Turchi, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 22, 1980, Ser. No. 189,237

Int. Cl.³ F03H *1/00*; H03K *17/90*

U.S. Cl. 60—202 **4 Claims**



1. In a plasma thruster having arc jet electrodes, a current source and a power circuit including a spark gap connecting said current source to said arc jet electrodes, the improvement residing in a Hall effect switch means, said Hall effect switch means comprising

a self excited Hall effect switch connected across said power circuit and in parallel with said spark gap, said Hall effect switch comprising

Hall effect active element means having terminals for connection into said power circuit to effect the passage of electrical current through said Hall effect active element means, and

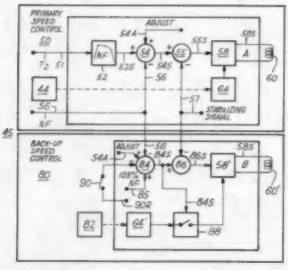
magnetic field means including an exciter coil for providing a magnetic field perpendicular to the electrical current flow in said Hall effect active element means, said exciter coil being connected in parallel with said Hall effect active element means and controlling the magnitude of said perpendicular magnetic field in response to electrical current flowing through said exciter coil.

4,397,148

CONTROL SYSTEM FOR AN AUGMENTED TURBOFAN ENGINE

William W. Stockton, and Walter D. Hutto, Jr., both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 2, 1980, Ser. No. 165,159
Int. Cl.³ F02K 3/02
U.S. Cl. 60—223 **22 Claims**



1. An augmented turbofan engine of the type having a main engine fuel flow and an augmentation fuel flow, primary speed control means powered by a first electrical power supply means and including a variable area exhaust nozzle, wherein fan speed is controlled by modulation of main engine fuel flow and wherein loss of electrical power to the primary speed control means during augmented operation results in a reversion from fan speed control to core engine speed control and in reducing the augmentation fuel flow while changing the variable area exhaust nozzle from a relatively open position to a relatively closed position, wherein the improvement comprises:

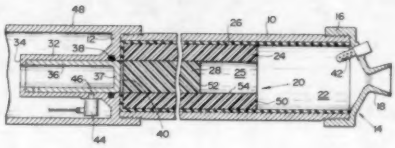
backup speed control means coupled to the primary speed control means for limiting fan speed in augmented operation during a loss of said electrical power to said primary speed control means while other apparatus changes said variable exhaust nozzle from said relatively open position to said relatively closed position and while other apparatus reduces said augmentation fuel flow from a predetermined level toward a minimum level.

4,397,149

VARIABLE THRUST SOLID PROPELLANT ROCKET MOTOR

Katsuaki Kosaka, Tokyo, and Kazunori Kawasaki, Kawagoe, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 12, 1981, Ser. No. 263,099
Claims priority, application Japan, May 13, 1980, 55-63562
Int. Cl.³ F02K 9/12, 9/26
U.S. Cl. 60—254 **14 Claims**



1. A solid propellant rocket motor comprising:

a motor case which defines therein a combustion chamber and is provided with a nozzle;

a first propellant grain fixedly disposed in the combustion chamber and formed with a hole which intersects an initial burning surface of the grain;

a second propellant grain which is slidably and gastightly fitted in said hole of the first grain and is shorter in length than said hole, an end surface of the second grain exposed to the combustion chamber being uninhibited to become a burning surface;

restraining means for restraining the second propellant grain from moving relative to the first propellant grain; and

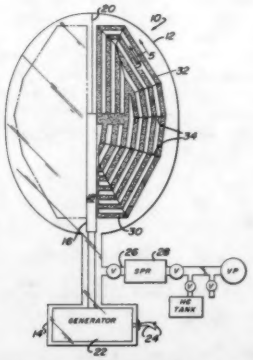
releasing means for rendering the restraining means ineffective at a desired moment during operation of the rocket motor thereby allowing the second grain to be moved over a predetermined distance within said hole by the pressure of combustion gas in the combustion chamber such that a portion of the inner surface of the first grain defining said hole is exposed and provides an additional burning surface.

4,397,150

POWER GENERATING APPARATUS USING RADIANT ENERGY

Marc S. Paller, 1251 Dickinson Dr., Apartment 13-L, Coral Gables, Fla. 33146

Filed May 9, 1980, Ser. No. 148,136
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.8 **13 Claims**



1. Power generating apparatus comprising a radiation-transparent housing, a drive rotor mounted in said housing for

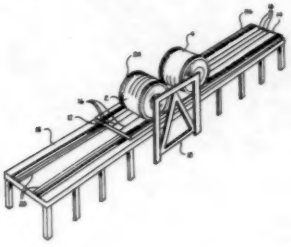
rotation therein, a plurality of circumferentially spaced longitudinally extending radiometric vanes disposed on said rotor, each vane having one surface thereof having radiation-absorptive characteristics and the other surface thereof having radiation reflective characteristics, power take-off means operably coupled to said drive rotor to produce useful work, and pressure regulating means operatively coupled to said housing for selectively regulating gas pressure within said housing.

4,397,151

HEAT ENGINE

Samuel S. Houlton, 616 G St., Apartment 23, Chula Vista, Calif. 92010

Filed Mar. 22, 1982, Ser. No. 360,884
Int. Cl.³ F03G 7/06
U.S. Cl. 60—527 **7 Claims**



1. In a heat engine with a source of heat energy and a means for alternately applying said heat energy for suitable periods of time, the improvement comprising:

(a) a first spooling means rotatable about a fixed axis,

(b) a second spooling means rotatable about a fixed axis, the axis of the second spooling means being substantially parallel to the axis of the first spooling means,

(c) an elongated member disposed essentially tangential to both spooling means with said member's longitudinal axis being substantially normal to the axes of the first and second spooling means, said member being operable to move a suitably limited distance along its longitudinal axis in a first direction and in a second and opposite direction,

(d) a first plurality of nitinol bands annealed as straight lengths and each being suitably fixed at one end to the first spooling means and at the other end to the elongated member such that when said member is moved in the first direction, said bands are spooled about said spooling means and when said member is moved in the second direction, said bands are unspooled from about said spooling means, and

(e) a second plurality of nitinol bands annealed as straight lengths and each being suitably fixed at one end to the second spooling means and at the other end to the elongated member such that when said member is moved in the second direction said bands are spooled about said spooling means and when said member is moved in the first direction, said bands are unspooled from about said spooling means, the heat energy being alternately applied to the first and second plurality of nitinol bands to cause operation of the engine.

4,397,152

SOLAR FURNACE

Derrick A. Smith, P.O. Box 1974, Hollywood, Fla. 33020

Filed Sep. 26, 1980, Ser. No. 191,123
Int. Cl.³ F03G 7/02; F24J 3/02
U.S. Cl. 60—641.15 **25 Claims**

1. A solar furnace electricity generating system comprising:

(a) a concentrator and accumulator for the sun's rays to generate a concentrated high temperature solar beam;

(b) a heat hearth disposed to absorb heat from said concentrated high temperature solar beam;

(c) a plurality of concentric alternating heat-transfer-medium-containing chambers and heat absorption zones around said heat hearth, said plurality of zones comprising

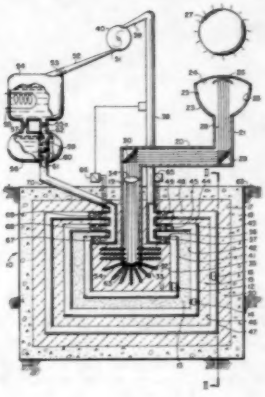
(i) a primary chamber containing a first heat-transfer-medium in heat-transfer contact with said heat hearth;

(ii) a primary heat-absorption zone containing a primary heat-absorbing material in heat-transfer contact with said primary chamber;

(iii) a secondary chamber containing the same heat-transfer-medium in heat-transfer contact with said primary zone;

(iv) a secondary heat-absorption zone containing a second and different heat-absorbing material in heat-transfer contact with said secondary chamber; and

(v) a tertiary chamber containing the same heat-transfer-



medium in heat-transfer contact with said secondary zone;

(d) valved outlet lines leading from each said heating-transfer-medium-containing chamber to conduct such heat-transfer media to a common vapour outlet line leading to a vapour-powered electricity-generating turbine;

(e) valved outlet line from said turbine connected to a liquid reservoir;

(f) valved outlet means from said liquid reservoir to a plurality of valved inlet lines, each leading to an associated said heat-transfer-medium-containing chamber; and

(g) control means to actuate selected vapourization/condensation cycles from selected heat-transfer-medium-containing chambers, to the exclusion of similar vapourization/condensation cycles from other heat-transfer-medium-containing chambers;

thereby to result in substantially continuous generation of electricity during periods of daylight and nighttime.

4,397,153

POWER CYCLES BASED UPON CYCLICAL HYDRIDING AND DEHYDRIDING OF A MATERIAL

Lynn E. Terry, 22 Suncrest Ave., Bridgeton, N.J. 08302, and Roger J. Schoeppel, P.O. Box 971, Stillwater, Okla. 74074

Division of Ser. No. 900,769, Apr. 27, 1978, Pat. No. 4,198,827, which is a division of Ser. No. 666,786, Mar. 15, 1976, Pat. No. 4,090,361. This application Mar. 3, 1980, Ser. No. 126,377
Int. Cl.³ F01K 25/06
U.S. Cl. 60—649 **1 Claim**

1. A method for deriving power from a low-grade thermal energy source and a relatively higher-grade thermal energy source comprising:

combining hydrogen gas with a hydride-forming material

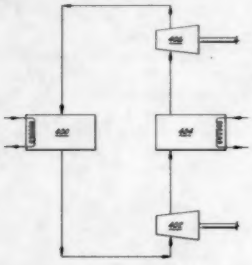
under conditions of temperature and pressure such that a hydride saturated with, and in equilibrium with, hydrogen gas is formed;

using a relatively low-grade thermal energy source at a temperature, T_1, to heat the hydride at constant volume to a temperature above the equilibrium temperature of the hydride to activate the hydride by chemically compressing the hydrogen gas;

transferring heat to the activated hydride from said low-grade thermal energy source, and concurrently releasing the hydrogen gas therefrom at elevated pressure;

conveying the released hydrogen gas from the hydride to a first power producing expansion device;

expanding the hydrogen gas through said first power producing expansion device to a pressure above the equilibrium pressure of said hydride-forming material to produce power and cool the hydrogen gas to a temperature T_2;



passing at least a portion of the cooled hydrogen gas from said first power producing expansion device, after expansion therethrough, into heat exchange relation to a relatively higher-grade thermal energy source at a temperature T_3 which is higher than temperature T_2 to heat the hydrogen gas from said expansion device; and

conveying the heated hydrogen gas, following heat exchange with said relatively higher-grade thermal energy source, to a second power producing expansion device;

expanding the hydrogen gas conveyed to said second power producing expansion device through said second power producing expansion device to produce power and cool the hydrogen gas to a temperature at least as low as the temperature T_1 at which said hydride is saturated with, and in equilibrium with, hydrogen gas; and

recycling the hydrogen gas after expansion through said second power producing expansion device to said hydride-forming material; and

cyclically repeating the foregoing steps.

4,397,154

VORTEX GAS COOLER

Kenneth R. Bowers, Jr., 735 Shady La., Pittsburgh, Pa. 15228

Filed Feb. 16, 1982, Ser. No. 348,679

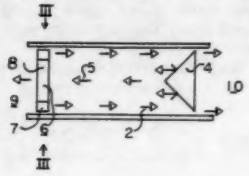
Int. Cl.³ F25B 9/02

U.S. Cl. 62—5 **5 Claims**

1. A vortex gas cooler having:

(a) a cylindrical tube;

(b) a fan within said tube, said fan having outer region, rotatable fan blades disposed to impel an outer region vortex gas flow having circular motion and also moving through said tube in a first linear direction, said fan having an inner region which permits passage of an inner vortex gas flow within



said outer vortex gas flow, said fan disposed to directly generate a gas vortex flow pattern within said tube.

4,397,155

STIRLING CYCLE MACHINES

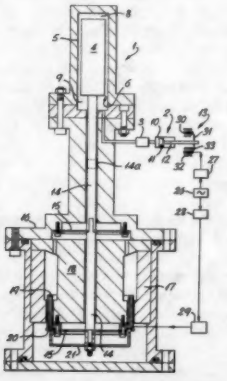
Gordon Davey, Oxford, England, assignor to National Research Development Corporation, London, England

Filed Jun. 24, 1981, Ser. No. 276,983

Claims priority, application United Kingdom, Jun. 25, 1980, 8020735

Int. Cl.³ F25B 9/00

U.S. Cl. 62—6 **10 Claims**



1. A Stirling cycle machine comprising:

a displacer,

a compressor;

a first electromagnetic device connected to said compressor and acting as the compressor power source in one mode of operation of said machine and as a driven source of electrical energy in another, and

a second electromagnetic device connected to said displacer and operable as an externally-variable control of the movements of said displacer.

4,397,156

DISPLACER FOR LOW-TEMPERATURE REFRIGERATING MACHINES

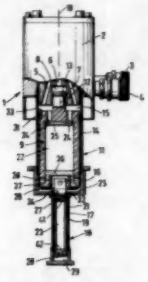
Rolf Heisig, Weilerswist; Hans-Hermann Klein, Hurth, and Karl-Heinz Völker, Julich, all of Fed. Rep. of Germany, assignors to Leybold Heraeus GmbH, Postfach, Fed. Rep. of Germany

Filed Oct. 21, 1981, Ser. No. 313,697

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044427

Int. Cl.³ F25B 9/00

U.S. Cl. 62—6 13 Claims



1. In a displacer for a low-temperature refrigerating machine, the displacer having a hollow space with one end of the hollow space adapted for receiving and exhausting a working gas and the other end adapted for communicating with an expansion space and a regenerator of low heat conductivity in the hollow space, the improvement to the displacer comprising: a sintered material member closing the hollow space at least at one end of the displacer, whereby the sintered material may form at least part of the regenerator in the hollow space.

4,397,157

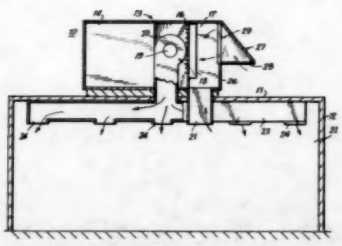
SYSTEM FOR CONDITIONING AIR OF AN INTERNAL SPACE

Deane R. Keuch, White Plains, N.Y., assignor to Sure Air Limited, New York, N.Y.

Continuation of Ser. No. 756,468, Jan. 3, 1977, abandoned, and Ser. No. 944,180, Sep. 21, 1978, abandoned. This application May 19, 1980, Ser. No. 151,135

Int. Cl.³ F25B 25/00, 29/00

U.S. Cl. 62—180 9 Claims



1. A system for air conditioning an internal space comprising a multiple outlet supply duct, a return duct, a blower for drawing air form said internal space through said return duct and recirculating said air through said supply duct to said internal space, an air conditioning unit transferable between an actuated and deactuated condition and including a cooling element located in the path of said circulating air through said ducts, means including a damper transferable between alternative fully open and fully closed positions providing communication between the ambient atmosphere and said return duct, a first thermostatic switch transferable alternatively on to a fully actuated or a fully deactuated condition in response only to the temperature in said internal space exceeding and being less than a first predetermined value respectively, a second thermostatic switch transferable alternatively only to a fully actuated or a fully deactuated condition in response only to the temperature of said ambient atmosphere exceeding and being less than a second predetermined value respectively and control means responsive only to the actuation of said first and second thermostatic switches for actuating said blower and air conditioning unit and fully closing said damper and responsive only to the actuation of said first thermostatic switch and the deactuation of said second thermostatic switch for deactuating said air conditioning unit and actuating said blower and fully opening said damper.

4,397,158

APPARATUS FOR TREATING MATERIALS IN THE FORM OF CONTINUOUS LENGTHS

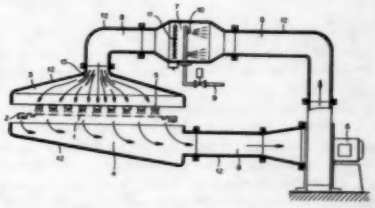
Wenzel Brenik, Grünwald, and Dieter Riedel, Porta Westfalica-Hausberge, both of Fed. Rep. of Germany, assignors to Drabert Söhne, Minden, Fed. Rep. of Germany

Filed Sep. 1, 1981, Ser. No. 298,306

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015672

Int. Cl.³ F25D 25/04

U.S. Cl. 62—380 10 Claims



1. An apparatus for treating coated or uncoated materials made of natural or synthetic polymers to improve the quality thereof in which a web of the material in the form of a continuous length is subjected to a plurality of successive processing steps including a cooling step in which the material is cooled by means of a liquefied gas forming a cooling medium at an extremely low temperature, said apparatus comprising:

means for conveying said web successively through a plurality of processing stations including a cooling station;

at least one blast nozzle head at said cooling station spanning the width of said web and opening toward said web at least on one side thereof, said blast nozzle head having a central inlet and walls diverging toward a wide outlet side confronting said web, said walls defining a chamber diverging toward said web;

a plurality of blast nozzles spaced across said web in said blast nozzle head and spanning a mouth of said chamber and trained upon said web for directing said cooling medium thereagainst as said web passes said head, said cooling medium being distributed to said nozzles by said chamber;

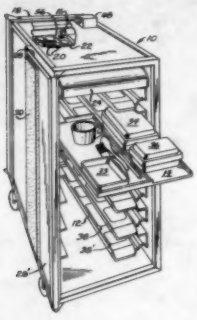
a source of said cooling medium connected to said head for delivering said medium to said chamber and said nozzles, said source having a suction side; and

an extractor head juxtaposed with the opposite side of said web, the said cooling station for drawing cooling medium traversing said web away from the latter, said extractor head being connected to said suction side of said source.

4,397,159
APPARATUS FOR CHILLING A PLURALITY OF FOOD TRAYS

Malcolm J. Dodd, Litchfield, Conn., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 16, 1981, Ser. No. 321,852
Int. Cl.³ F25D *25/02*
U.S. Cl. 62—382 **6 Claims**



1. In an apparatus for heating at least one covered container on each of a plurality of vertically stacked trays located on a plurality of shelves in a refrigerated enclosure having a door at at least one end thereof while at least one other container on each tray is chilled, the improvement comprising at least one blower element mounted inside the enclosure adjacent the end thereof which is opposite to said door and also adjacent the top wall surface of the enclosure; a removable insulated pan adapted to contain dry ice or other cooling material positioned on a shelf of said enclosure above the stacked trays, said pan having an inlet opening at one end to receive the exhaust from said blower and an exhaust opening at its other end to direct chilled air which has passed over the cooling material in the pan downwardly over the inside surface of said door; spacing means located in said enclosure and/or on the trays for spacing the trays from at least portions of said door and from at least portions of the enclosure end which is opposite to said door, and prevent them from blocking the vertical flow of chilled air passing along the portions of the inside walls of said door and opposite enclosure ends which are adjacent the portions of the trays containing the containers to be chilled, said flow of chilled air being thereby channeled so as to pass downwardly along the door adjacent the exhaust opening in said pan, horizontally across the containers to be chilled on said vertically stacked trays, and upwardly along the end wall of said enclosure opposite to said door to an inlet duct means for said at least one blower element.

4,397,160
NEEDLE ARRANGEMENT FOR WARP KNITTING MACHINES AND WARP KNITTING MACHINES EQUIPPED THEREWITH

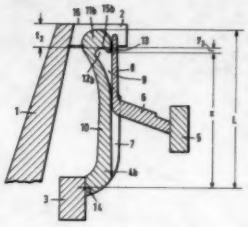
Karl Winter, Obertshausen, and Gerhard Hittel, Rodgau, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Sep. 24, 1981, Ser. No. 305,261
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036309
Int. Cl.³ D04B *35/04*
U.S. Cl. 66—120 **10 Claims**

1. A knitting needle set for a warp knitting machine comprising:

(a) a needle bar; and

(b) a plurality of hooked needles each of substantially equal length clamped to said needle bar, said plurality of needles each having a hook end and each having at substantially the same distance from its clamping position an insertion opening bordered by the hook end, said insertion opening leading to an interior hook space, said plurality of needles being divisible into at least two groups, the spacing from

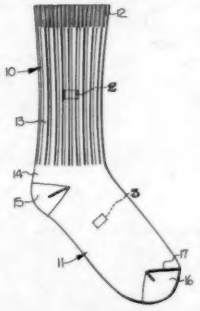


the zenith of the concave surface of the hook space to the hook end in each of the needles of a given one of said groups differing from that of another one of said groups.

4,397,161
SOCK WITH A COMPRESSIVE SUPPORT FOOT

Robert E. Chesebro, Jr., Sheboygan, and Richard H. Heinig, Sheboygan Falls, both of Wis., assignors to Wigwam Mills, Inc., Sheboygan, Wis.

Filed Sep. 4, 1981, Ser. No. 299,478
Int. Cl.³ D04B *9/46*
U.S. Cl. 66—178 A **6 Claims**

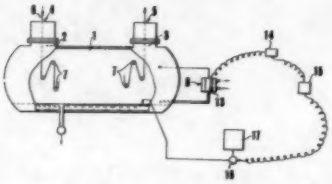


1. In a hosiery article including integral leg and foot portions knit throughout of successive courses of body yarn, the combination therewith of elastomeric yarn incorporated in regularly repeated courses throughout said leg portion, and elastomeric yarn incorporated in regularly repeated courses throughout said foot portion, the density of the elastomeric yarn being greater in said foot portion than the density of the elastomeric yarn in said leg portion, the greater density of the elastomeric yarn in said foot portion providing a snug fit in said foot portion, greater compressive support in said foot portion, and aiding in the stimulation of blood flow from the foot and up the leg of the wearer.

4,397,162
DEVICE FOR MEASURING AND CONTROLLING THE PH OF THE ATMOSPHERE IN A HIGH PRESSURE STEAMER

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Jul. 13, 1981, Ser. No. 282,603
Claims priority, application Japan, Jul. 19, 1980, 55-99050
Int. Cl.³ D06B 23/20
U.S. Cl. 68—5 E 1 Claim

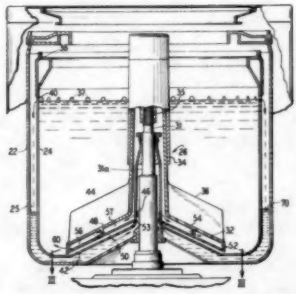


1. A device for measuring and controlling the pH of the atmosphere in a high pressure steamer, comprising a condenser for taking out and condensing a part of steam from the interior of the high pressure steamer body successively, a pH-meter immersed in the solution condensed in the condenser, an indicator and a transducer which are to work in accordance with the signal from the said pH-meter, and a means for controlling the amount of a pH controlling solution to be supplied into the interior of the steamer body in accordance with the output of the said transducer.

4,397,163
REDUCED ENERGY CONSUMPTION AUTOMATIC WASHERS

Jack F. Clearman, St. Joseph, and Thomas H. Buckleitner, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 19, 1981, Ser. No. 294,298
Int. Cl.³ D06F 13/02
U.S. Cl. 68—53 8 Claims



4. In an automatic washer of the type having an oscillatory agitator, the improvement of:

pumping means comprising channel means in a skirt portion of said agitator forming an outward path through a skirt portion of said agitator through which liquid is to be pumped; and

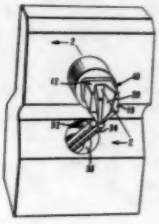
flapper means in said channel means below the level of liquid during operation and movably responsive to oscillation of the agitator,

said channel means having abutment means on opposite sides of said flapper means and engageable therewith upon movement in opposite directions to form together with said flapper means a directing means for pumping liquid through said channel means.

4,397,164
APPARATUS FOR APPLYING FINISH TO A YARN

Edwin K. Binnersley, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 187,172, Sep. 15, 1980, Pat. No. 4,329,750.
This application Jan. 7, 1982, Ser. No. 337,666
Int. Cl.³ D06B 1/08
U.S. Cl. 68—200 5 Claims

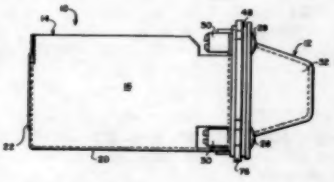


4. In a yarn finish applicator that includes a body member having top, opposed side and front and back surfaces and a slot in the front surface running from top to bottom, said slot having bottom and side walls, and a passage connecting the back surface of the body member to the bottom wall of the slot for supplying finish to said slot, the improvement comprising: said front and back surfaces being angled downwardly toward each other and said opposed side surfaces tapered downwardly toward each other to form an edge with the bottom wall of the slot, the side walls of said slot tapering inwardly toward each other as they approach the bottom wall of the slot while tapering toward each other from top to bottom of the body member.

4,397,165
LOCKING MECHANISM FOR A MONEY BOX ASSEMBLY HAVING A FUSIBLE CAM

Anthony LiCausi, Maspeth, N.Y., assignor to Kidde, Inc., Clifton, N.J.

Filed Jan. 9, 1981, Ser. No. 223,897
Int. Cl.³ E05B 63/00
U.S. Cl. 70—1.5 4 Claims



1. In a coin operated mechanism having a housing, the money box assembly improvement comprising:

a key coded lock;

at least one locking bolt movable between a locked position wherein said bolt engages with the wall of said housing to which the money box assembly is mounted, and an unlocked position to permit said assembly to be removed from said housing thereby to gain access to the money box;

a fusible transmission member operatively connected as a transmission link between said lock and said locking bolt; said transmission member being formed of a material having

a predetermined melting temperature substantially lower than the melting temperature of the material forming said lock;

said predetermined temperature being lower than the temperature transmitted through said lock to said transmission member when sufficient heat is applied to destroy the lock;

said predetermined temperature melting said transmission member to remove it as a link between said lock and said locking bolt rendering said transmission member inoperative for moving said locking bolt from said locked position to said unlocked position.

4,397,166

MAGNETIC LOCK HAVING A BOLT AND LOCKING PIECES

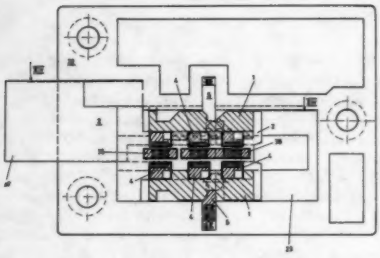
Adalbert Paar, Vienna, Austria, assignor to Evva-Werk Spezialerzeugung von Zylinder-und Sicherheitsschloessern GmbH & Co., Vienna, Austria

Filed Dec. 18, 1979, Ser. No. 104,897

Claims priority, application Austria, Dec. 28, 1978, 9332/78

Int. Cl.³ E05B *47/00*

U.S. Cl. 70—276 **21 Claims**



1. A magnetic lock system for a door or the like, comprising a casing having a cavity; a locking system in said cavity and comprising a latch slidable from a first locking position into a second unlocking position; at least one locking element slidably arranged within the latch for selectively moving the locking element between the first and the second position, the locking element being integrally provided with webs; a plurality of magnetic rotors arranged in the latch and each having a recess in which the respective web of the locking element is engageable when the latch moves from the first position into the second position, thereby obtaining a relative movement between the locking element and the magnetic rotors; and at least one blocking element supported within the casing and engaged with the locking element in the first position and in the second position.

4,397,167

ANTITHEFT DEVICE FOR MOTOR VEHICLES

Guiseppe Maiocco, Rivoli, Italy, assignor to Arman S.p.A., Druento, Italy

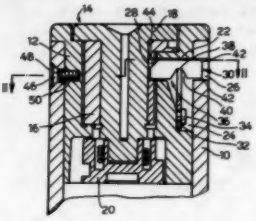
Filed May 21, 1980, Ser. No. 151,959

Claims priority, application Italy, Jun. 20, 1979, 68314 A/79

Int. Cl.³ B60R *25/02*; E05B *9/04, 9/06, 29/00*

U.S. Cl. 70—370 **6 Claims**

1. An antitheft device for locking the steering shaft of a motor vehicle, comprising an outer cylindrical housing (10), an inner tubular body (12) positioned inside the outer housing (10), a cylinder lock (14) comprising an inner rotating cylinder (18) and an outer stationary cylinder (16) and located inside the inner tubular body (12) and a locking member (30) carried by the inner tubular body (12) and capable, when the device is being assembled, of locking the inner tubular body (12) with respect to the outer housing (10) on the one hand and the cylinder lock (14) with respect to the inner tubular body (12) on the other hand characterized in that said inner tubular body (12) is provided with a first radial opening (22), in which said locking member is slidingly mounted, said locking member comprising a key (30), the length of which is longer than the length of said radial opening (22), an elastic spring means (32) carried by said tubular body and engaging said key (30) to



maintain said key in a central position, one end portion of said key (30) extending into one radial opening (26) in said cylindrical housing (10) and the other end portion of said key (30) extending into a radial opening (28) in said stationary cylinder (16), the radial displacement of the key (30) in either direction with respect to said central position being resiliently opposed by said elastic spring means (32).

4,397,168

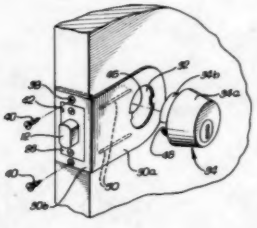
DOOR REINFORCEMENT AND LOCK GUARD PLATE

Anthony J. Rotondi, Whittier, and Richard O. Mullich, Burbank, both of Calif., assignors to TRE Corporation, Beverly Hills, Calif.

Continuation of Ser. No. 141,417, Apr. 18, 1980, abandoned. This application May 18, 1982, Ser. No. 379,302

Int. Cl.³ E05B *15/02*

U.S. Cl. 70—417 **6 Claims**



1. In a door system comprising:

a frame including a lock bolt opening and a doorstop;

a door carried within the frame;

a door lock assembly connected to the door, said assembly including a lock bolt extending from an edge of the door into said lock bolt opening when the door is closed, the improvement comprising:

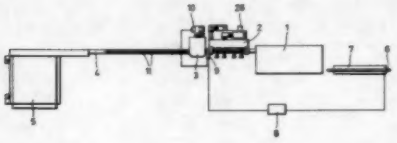
a one-piece L-shaped guard plate having a first leg which fits over the side of the door opposite said doorstop, said first leg including a first opening through which a portion of the door lock assembly extends, and a second leg which covers a portion of the door edge, said second leg including a second opening through which the lock bolt extends, wherein the side of the door facing the doorstop has a substantially flat surface along the length of the doorstop, whereby said guard plate can be installed in an existing door system without causing misalignment of said lock bolt with respect to said lock bolt opening.

4,397,169

ROLLING MILL

Karlhans Staat, Homberg, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Company, Hilden, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 228,742
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014359
Int. Cl.³ B21B 37/00
U.S. Cl. 72—10 4 Claims



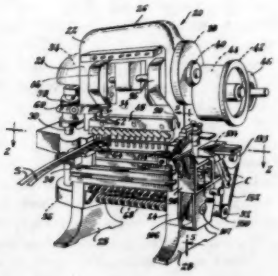
1. In a stretch-reducing rolling mill for manufacturing finished tubes of reduced diameter and substantially uniform wall thickness from pieces of tubular stock, the improvement comprising a severing device following said stretch-reducing mill receiving tubes from said mill for cutting pieces of tube or stock to substantially uniform lengths without a residual end length, a control means operatively connected to said severing device, said control means including computer means adapted to estimate a final elongated length of tubing from the weight of tubular stock entering the mill and its final wall thickness and to divide said final length into portions of substantially equal lengths, a measuring means disposed in advance of the stretch-reducing rolling mill, said measuring means including a weighing means for weighing the tubular stock prior to stretch reducing, and connections between said control means, said measuring means and said severing means whereby said severing device is actuated to cut a plurality of substantially uniform lengths of finished tubing without a residual end length in accordance with a signal from the control means.

4,397,170

DOUBLE FEED EYELET MACHINE WITH ROLL FORMING CAPABILITY

Henry F. Seebach, Jr., Middlebury, Conn., assignor to Eyelematic Manufacturing Company, Watertown, Conn.

Filed Sep. 14, 1981, Ser. No. 301,978
Int. Cl.³ B21D 43/05
U.S. Cl. 72—68 6 Claims



1. A multistation transfer press for repetitive cycles of blanking and forming metal workpieces from a continuous metal strip fed to the press, wherein the forming involves a rolling operation on the workpieces, said press comprising

a frame having a press bed and a plurality of tool stations arranged seriatim thereon to define a single file progression path along which the workpieces are advanced stepwise between successive blanking/forming operations;

blanking/forming tools positioned along said progression path, said tools being disposed in paired duplicate sets at adjacent tool stations;

ram means carried on said press frame, and driving means for reciprocating said ram relative to said press bed, each tool of said paired sets having a punch portion reciprocated by said ram relative to a cooperating die portion supported in said press bed to effect simultaneous blanking/forming operations at each of said paired stations;

reciprocable transfer mechanism on said frame for simultaneously advancing workpieces from station to station, and means for actuating said transfer means to advance each workpiece a distance equal to the distance between corresponding tools of each paired set;

drive means for operating said reciprocable ram and transfer mechanism.

said press having paired rolling stations each having spindles with workpiece receiving arbors at respective free ends thereof, means supporting said spindles with their arbors positioned above and in registry with paired workpieces delivered to said rolling station by said transfer mechanism;

a pair of plungers having free ends cooperating with said arbors, said plungers being axially aligned therewith and supported in said press with their free ends facing the free ends of said arbors but normally positioned below paired workpieces delivered by said transfer mechanism;

means for reciprocating said plunger free ends axially toward and away from said arbors, and means carried by said plungers for pushing workpieces upwardly from said transfer mechanism out said spindle arbors;

forming roll means cooperating with said arbors to engage said workpieces and roll form them; and

drive means producing relative rotation of said arbors and forming roll means to effect said roll forming of said workpieces.

4,397,171

METHOD FOR FORMING SPLINES IN SHEET METAL

Sang-Kee Suh, Daegu, Rep. of Korea; Gotz S. Hauser, Southfield, and Harry T. Johnson, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 27, 1981, Ser. No. 287,443
Int. Cl.³ B21D 22/00
U.S. Cl. 72—348 4 Claims

1. A method of making a longitudinally splined annular member comprising:

forming a blank having a circular cylindrical wall extending longitudinally;

forming a first set of longitudinal splines on the cylindrical wall having a first major diameter;

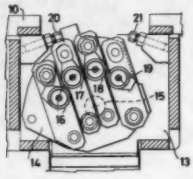
reforming the first set of splines to produce a second set of longitudinal splines having a greater pressure angle than the first set and a second major diameter smaller than the first major diameter,

the forming and reforming steps comprising passing a single punch having a splined surface formed on its outer surface longitudinally within a die having a splined surface that is conjugate to the outer surface of the punch formed on its inner surface, the outer surface of the punch and inner surface of the die providing a annular space therebetween whereby the cylindrical wall is formed with longitudinal splines upon being forced to conform to the shape of the spaced as the punch passes within the die.

4,397,172
TWO-DIE, FOUR-PUNCH PRESS FOR THE PRODUCTION OF SCREWS, BOLTS, RIVETS AND LIKE ARTICLES

Eufemia Garlaschi, Via Victor Hugo 4, Milan, Italy

Filed Mar. 9, 1981, Ser. No. 242,150
Claims priority, application Italy, Dec. 19, 1980, 26817 A/80
Int. Cl.[3] B21D *22/00*
U.S. Cl. 72—356 3 Claims

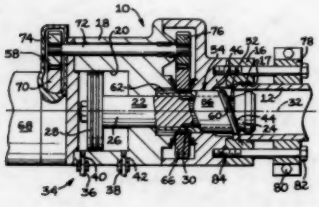


1. A press having two dies and four punches for the production of screws, bolts, rivets and like shaped articles, comprising a casing, a ram with means for imparting thereto a rectilinear reciprocation motion towards and away of the dies, a plate carrying the four punches mounted frontally on said ram, means for shifting said plate on the ram alternately in two working positions, in each of which positions two of the four punches are aligned with the two dies, characterized in that the punch-carrier plate is mounted on the ram by means of a tail-piece having its axis parallel to the direction of reciprocation of the ram so as to be able to oscillate about said axis, and that for the control of the oscillations of the punch-carrier plate a linkage is provided which derives its drive from a cam having desmodromic profiles with which a rocking lever cooperates by means of two followers contacting said profiles.

4,397,173
TUBE EXPANDER

Larry G. Eftefield, Edelstein, and Edward R. Horton, Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00276, § 371 Date Mar. 3, 1981, § 102(e) Date Mar. 3, 1981, PCT Pub. No. WO82/03037, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 3, 1981, Ser. No. 277,746
Int. Cl.[3] B21D *41/02;* B23P *11/00*
U.S. Cl. 72—392 4 Claims



1. In a tube expander (10) for extrudably expanding the walls of a tubular member (12) into the bore (14) of a flange (16), said tube expander (10) having a housing (18), a mandrel (22) having a first end portion (24) and longitudinal axis (32) and being at least partially disposed within said housing (18), and a first means (34) for moving said mandrel (22) along said longitudinal axis (32), the improvement comprising:

an annular forming member (44) having a generally circular cross section, being slideably mounted on said mandrel (22), and being moveable between a first position at which the forming member (44) is at a skew angle with respect to the longitudinal axis (32) of said mandrel (22) and a second position at which said forming member (44) is normal to the longitudinal axis (32) of said mandrel (22);

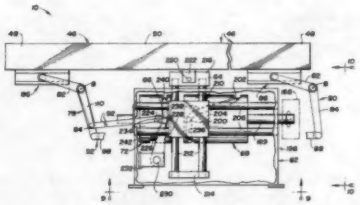
a second means (54) for moving said annular forming member (44) from said first position to said second position, said second means (54) having a sleeve member (56) rotatably mounted on said mandrel (22); and,

a third means (58) for rotating said sleeve member (56), said third means including a sleeve gear (66) slidably connected to said sleeve member (56), a motor (68) having a drive gear (70), and a drive train (72) having a first gear (74) mating with said drive gear (70) and a second gear (76) mating with said sleeve gear (66).

4,397,174
CAM ACTUATED LOADER FOR FORMING MACHINE

Harald N. Jungesjo, Rochester, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.

Filed Jun. 18, 1981, Ser. No. 274,963
Int. Cl.[3] B21H *9/00*
U.S. Cl. 72—419 7 Claims



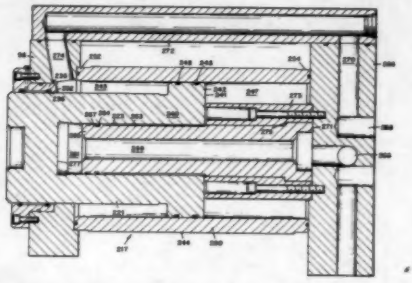
1. A loader for a machine having a work station at which forming of workpieces is performed, said loader comprising: a horizontally elongated transfer beam having opposite ends and an intermediate portion extending therebetween; a linkage extending between the opposite ends of the beam to provide support thereof for vertical and horizontal movement in a closed path to move workpieces into and out of alignment with the associated machine work station; a pair of horizontal slide connections that respectively connect the opposite ends of the transfer beam to the linkage to permit horizontal movement of the transfer beam without any vertical movement thereof; a dual output cam unit having a first output connected to the intermediate portion of the beam; a first cam; a first follower driven by the first cam; a vertical slide connector that connects the first follower to the first output to provide horizontal movement of the transfer beam under the impetus of the first cam; the slide connector permitting vertical movement of the transfer beam without any horizontal movement thereof; a second output including an actuating link connected to the linkage; a second cam; and a second follower that is driven by the second cam and connected to the actuating link to provide linkage movement that moves the transfer beam vertically without any horizontal movement, said first and second cams moving the first and second followers to cooperatively move the beam vertically and horizontally in said closed path whereby workpieces are moved into alignment with said work station for forming and out of alignment therewith after the forming.

4,397,175

APPARATUS FOR CONTROLLING THE MOVEMENT OF A RECIPROCATORY HYDRAULICALLY DRIVEN ELEMENT

William F. Shear, Goodlettsville, Tenn., assignor to The Gleason Works, Rochester, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,100
Int. Cl.³ B21J 9/12
U.S. Cl. 72—453.02 8 Claims



1. Apparatus for controlling the movement of a reciprocatory hydraulically driven element of a metal forming machine between extended and retracted positions comprising:

primary piston means defined by said element,

primary reservoir means slidably receiving said primary piston means therein and for receiving hydraulic fluid to drive said primary piston means,

said primary piston means having a working face disposed in fluid communication with said primary reservoir means,

secondary reservoir means defined within and centered within said primary piston,

secondary piston means fixed relative to said apparatus, said secondary piston means being continuously slideably received within said secondary reservoir,

a source of pressurized hydraulic fluid,

first conduit means connecting said source of pressurized hydraulic fluid to said primary reservoir to selectively apply hydraulic force to the work face of said primary piston means to drive said primary piston means toward the extended position,

first valve means interposed in said first conduit means for controlling the flow of hydraulic fluid between said fluid source and said primary reservoir,

second conduit means connecting said source for pressurized hydraulic fluid to said secondary reservoir for applying hydraulic pressure to said secondary reservoir to drive said primary piston means toward the extended position,

control means for selectively actuating said first valve means to permit flow of hydraulic fluid to said primary reservoir when said primary piston means is in a predetermined position so that said primary piston means is driven by hydraulic pressure in both said primary reservoir and said secondary reservoir,

a third reservoir for holding hydraulic fluid,

third conduit means connecting said third reservoir to said primary reservoir, and

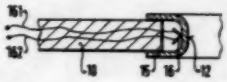
second valve means interposed in said third conduit means for controlling the flow of hydraulic fluid between said primary and third reservoirs and being operable to allow hydraulic fluid to flood into said primary reservoir from said third reservoir when said primary piston means is being driven solely by hydraulic pressure in said secondary reservoir and for automatically blocking hydraulic fluid flow from said primary reservoir to said third reservoir when said primary piston means is being driven by hydraulic pressure in said primary reservoir and said secondary reservoir.

4,397,176

INTERNAL COMBUSTION ENGINE KNOCKING SENSOR ARRANGEMENT

Siegfried Rohde, Schwieberdingen; Jörg Bonitz, Mühlacker; Robert Entenmann, Benningen; Rochus Knab, Kornwestheim; Herbert Schramm, Stuttgart, and Günther Schmidt, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,106
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006603
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 20 Claims



1. For combination with an internal combustion engine having at least one cylinder defining a combustion chamber and a cylinder head seal, sealing the cylinder head,

an engine knock sensor having

a temperature sensing element located in the wall of the at least one cylinder, and providing an output signal representative of temperature at, or in the vicinity of the engine cylinder wall;

connection means connected to the sensing element and conducting said output signal externally of the cylinder;

and an evaluation stage (E, E') connected to said connection means and responsive to and controlled by the output signal and providing an indication when the temperature of the cylinder wall exceeds a predetermined limit,

wherein the temperature sensing element is a thermo couple (16, 17);

the cylinder head seal includes

a metal liner (15);

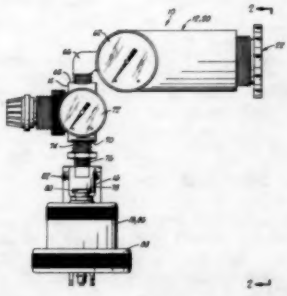
and the thermo couple is welded to the metal liner.

4,397,177

HYDRAULIC FILTER PRESS

David E. Cain, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 9, 1981, Ser. No. 242,159
Int. Cl.³ G01N 15/04
U.S. Cl. 73—61.4 28 Claims



1. An apparatus for pressing liquid from a fluid including suspended solids, comprising:

a filtration cell having a container means for receiving a sample of said fluid, having a pressure inlet communicating with said container means, having a filter means, one side of which is arranged for contacting said fluid sample in said container means, and having a liquid outlet for

draining liquid pressed from said fluid sample through said filter means;

a hand operated hydraulic pump means, communicated with said pressure inlet of said filtration cell, for supplying hydraulic fluid under pressure to said pressure inlet;

a pressure regulator means for regulating the hydraulic pressure supplied to said filtration cell, said regulator means including a high pressure inlet communicated with said pump means and including a regulated pressure outlet communicated with said pressure inlet of said filtration cell; and

coupler means, connected to said regulated pressure outlet of said pressure regulator means and detachably connected to said filtration cell.

4,397,178

FUEL ECONOMY RUNNING INDICATOR

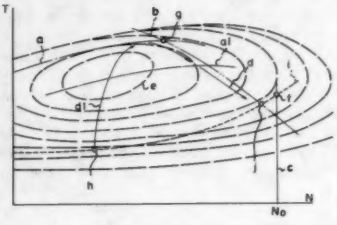
Haruo Chiba, Ageo; Yukichi Sekiguchi, Saitama, and Takashi Ohkubo, Omiya, all of Japan, assignors to Sanwa Seiki Manufacturing Co., Ltd., Saitama, Japan

Filed May 5, 1981, Ser. No. 260,722

Claims priority, application Japan, May 9, 1980, 55-60664

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—114 **6 Claims**



1. A fuel economy running indicator of an internal combustion engine comprising:

a characteristic convertor for converting a first operating parameter of the engine to an output signal having a functional relationship with the first operating parameter, said functional relationship being such that said output signal represents a limited value in the scope which said first parameter has a relatively small value and the output signal always represents a zero value when said first parameter exceeds a predetermined value;

a comparator for comparing said output signal with a second operating parameter of the engine and for generating an output signal in response to the magnitude comparison thereof, and

an indicating means which operates in response to the output signal of said comparator for indicating whether or not the operation of the engine is within the scope of an economic fuel consumption rate.

4,397,179

DEVICE FOR MEASURING THE MASS OF A FLOWING MEDIUM

Peter Romann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 259,315

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016923

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—118 **10 Claims**

1. A device for measuring the mass of a flowing medium, in particular for measuring the mass of air aspirated by internal combustion engines, having at least one temperature-dependent resistor disposed in the flow of the medium, a characteristic of which resistor is regulated in accordance with the flowing mass as a control variable, said control variable forming a standard for measuring the mass of the flowing medium, characterized in that the temperature-dependent resistor is embodied as a hot wire provided with at least one intermediate support point and two terminal support points, said at least one

intermediate support point yields elastically, whereby external forces acting on said support point are isolated from causing permanent deformation of the hot wire, and further characterized in that movement of said support point that deforms elastically is restricted by a stop.

4,397,180

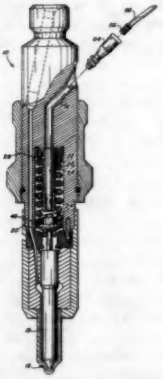
VALVE POSITION SENSOR FOR A POPPET FUEL INJECTOR VALVE

George D. Wolff, P.O. Drawer 9407, and Michael S. Ziemacki, 200 Avenue K, SE., Apt. 381, both of Winter Haven, Fla. 33880

Continuation-in-part of Ser. No. 87,983, Oct. 25, 1979, Pat. No. 4,359,895, and Ser. No. 187,171, Sep. 15, 1980. This application Mar. 9, 1981, Ser. No. 241,682

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **37 Claims**



1. A poppet fuel injector valve capable of receiving a magnetically sensitive valve position sensor, said valve and sensor comprising:

(a) a poppet valve positioned within a chamber in said injector and displaceable between open and closed positions;

(b) a passageway extending from an exterior surface or said injector into close proximity to the cavity in which said poppet valve is located, said passageway being dimensioned to receive a magnetically sensitive valve position sensor;

(c) a magnetically sensitive valve position sensor slidable into and out of said passageway;

(d) a magnet on the extremity of said valve adjacent said passageway; and wherein

(e) said passageway extends sufficiently adjacent said chamber such that the positioning of said magnetically sensitive sensor at the extremity of said passageway permits said sensor to detect magnetic flux changes of said magnet, as said magnet moves with said valve between said open and closed positions.

4,397,181

METHOD FOR DETERMINING FLUID SATURATION IN A SUBSURFACE FORMATION

Richard L. Caldwell, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,058
Int. Cl.³ G01V 1/40; E21B 49/00
U.S. Cl. 73—152 11 Claims

5. A method for carrying out a log-inject-log operation in a formation of known water density surrounding a borehole, comprising the steps of:

(a) recording a first borehole gravity log of said formation,

(b) flushing said formation at least to the depth of investigation of said borehole gravity log with a fluid having a density differing from that of the water present in said formation, and

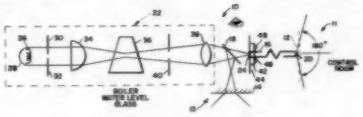
(c) recording a second borehole gravity log of said flushed formation.

4,397,182

METHOD OF ALIGNING A WATER LEVEL INDICATOR HAVING A REMOTE AND A LOCAL READOUT DISPLAY

Dave Bakul, Lancaster, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 31, 1981, Ser. No. 249,307
Int. Cl.³ G01F 23/00; G01B 11/00
U.S. Cl. 73—293 4 Claims



1. A method of aligning the locally receiving face of a fiber optic cable of a remote readout assembly with an optical signal from a locally measuring optical liquid level indicator comprising the steps of:

providing a beam splitter between the locally receiving face of the fiber optic cable and the signal from the liquid level indicator;

illuminating the locally receiving face of the fiber optic cable so as to have the optical signal from the indicator pass the beam splitter in illuminating the locally receiving face of the fiber optic cable;

viewing the beam splitter so as to see the presence of the actual reflection of the locally receiving face of the fiber optic cable on the face of the beam splitter; and

moving the locally receiving face of the fiber optic cable while viewing the face of the beam splitter to determine the position where the reflection of the face of the fiber optic cable on the face of the beam splitter is the brightest to thereby determine the maximum brightness of the remote readout assembly.

4,397,183

APPARATUS FOR DETECTING LEVEL CHANGES IN DISTANCE

Edmund W. Ballou, Chicago, Ill.; Frederick L. Voelz, Munster, Ind., and Thomas A. Collins, Olympia Fields, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Apr. 6, 1981, Ser. No. 251,613
Int. Cl.³ G01F 23/08; G02B 5/08
U.S. Cl. 73—293 5 Claims

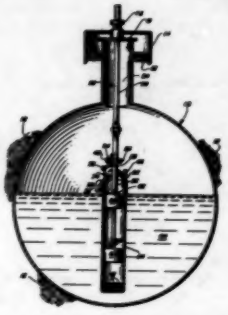
1. An apparatus useful in detecting changes in the amount of liquid in a liquid storage tank comprising:

a. signal emitting means capable of emitting a substantially constant signal;

b. support means associated with said signal emitting means and acting to hold said signal emitting means substantially stationary;

c. signal reflecting means associated with support means, said signal reflecting means being located at least partially within a float means which is connected to said support means, said float means being located at least partially in said liquid, said signal reflecting means reflecting at least a portion of said substantially constant signal from said signal emitting means to produce a reflected signal, said signal reflecting means being movably secured to said support means and being moveable in a substantially straight line direction toward or away from said signal emitting means in response to changes in the amount of liquid in said storage tank; and

d. signal receiving means capable of receiving a portion of said reflected signal from said signal reflecting means, said signal receiving means being substantially stationary with respect to said signal emitting means, whereby a change in



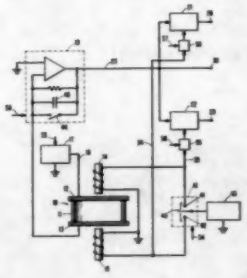
said signal received by said signal receiving means is indicative of a change in the amount of liquid in said storage tank.

4,397,184

METHOD AND APPARATUS FOR TESTING XEROGRAPHIC DEVELOPER MIX

Neil R. Bankert; Steven R. Heyer, and Lawrence Viele, Jr., all of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,579
Int. Cl.³ G01N 27/00, 33/26
U.S. Cl. 73—432 R 18 Claims



1. Apparatus for measuring the operational characteristics of a mixture of xerographic toner and carrier, comprising:

a substantially closed container having a first electrically conductive electrode and a second electrically conductive electrode joined by electrically insulating walls, said container being adapted to hold a sample mixture of the toner and carrier;

vibratory means associated with said container operable to cause the toner and carrier within said container to alternately impact said first and second electrodes;

a source of direct current voltage connected to one of said electrodes operable to establish an analog of an electrostatic latent image to be developed by the toner; and

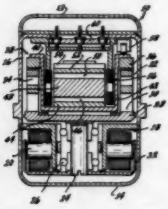
a charge measuring means connected to the other of said electrodes.

4,397,185

INERTIAL INSTRUMENT WITH CUP-SHAPED INERTIAL MASS

Robert J. G. Craig, Los Angeles; James J. Imbault, and John E. Fitzgerald, both Camarillo, all of Calif., assignors to Incosym, Inc., Westlake Village, Calif.

Filed May 12, 1981, Ser. No. 262,993
Int. Cl.³ G01C *19/08, 19/16;* G01P *15/13*
U.S. Cl. 73—504 **44 Claims**



1. An inertial instrument having a central axis and including:

(1) an inertial mass element having a substantially cup shape, coaxial with the central axis;

(2) suspension means direct coupled to said mass element exterior to the outside of said cup shape;

(3) flexure means symmetrically coupling said suspension means to a support structure for permitting limited rotation of said inertial mass element about a first axis orthogonal to the central axis;

(4) pickoff means adjacent said inertial mass element for detecting and signalling rotational motion about said first axis; and

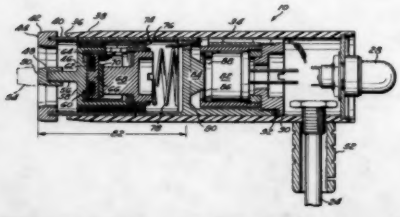
(5) torquer means for imparting to said inertial element a rotational motion about said first axis.

4,397,186

COAXIAL DIRECT-COUPLED ULTRASONIC PROBE AND METHOD OF NON-DESTRUCTIVE TESTING

Charles S. Phelan, Tustin, and Jacob R. Fort, El Toro, both of Calif., assignors to Shur-Lok Corporation, Irvine, Calif.

Filed Mar. 12, 1981, Ser. No. 243,140
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—584 **15 Claims**



1. A coaxial direct-coupled ultrasonic probe for use with a test set in the non-destructive testing of a structural material; said probe comprising:

a transmitter assembly having a transmitter button for contacting said structural material and for transmitting ultrasonic acoustical vibrations into said structural material;

a receiver ring having omnidirectional sensitivity and substantially surrounding said transmitter button so as to intercept vibrations produced in said structural material by said transmitter button; said receiver ring allowing the detection of defects in said structural material regardless of the relative orientation of said defects and said probe;

a housing enclosing an air cavity;

means for transmitting said mechanical vibrations intercepted by said receiver ring through said air cavity; and

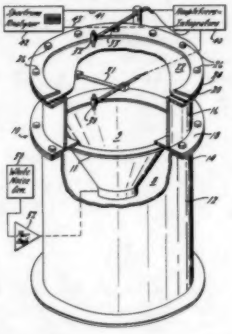
a receiver transducer for converting the ultrasonic vibrations transmitted through said air cavity into an electrical signal for display by said test set.

4,397,187

CHAMBER FOR TESING ACOUSTICAL TRANSMISSION LOSS CHARACTERISTICS OF SHEET MATERIALS

John L. Stribling, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 17, 1981, Ser. No. 293,550
Int. Cl.³ G01H *15/00*
U.S. Cl. 73—589 **4 Claims**



1. A chamber for testing acoustical transmission loss characteristics of sheet materials comprising:

means defining a first cylindrical enclosure oriented along a vertical axis;

means for producing acoustical vibrations within said housing including a speaker electrically connected to a generator for driving said speaker over a predetermined range of frequencies within at least the frequency range of approximately 20–800 Hz;

means for defining a second cylindrical enclosure oriented along said vertical axis and being separated from said first enclosure defining means by said acoustical means;

means for mounting said sheet material on one end of said second enclosure defining means separated from said acoustical means;

first means for detecting the pressure gradient within said second enclosure defining means;

second means for detecting the pressure gradient above said sheet material mounting means, wherein each of said first and second pressure gradient detecting means comprises a pair of oppositely facing microphones disposed along a line approximately parallel to said vertical axis and separated by a predetermined distance;

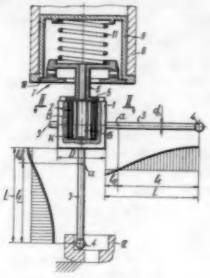
means for monitoring said first and second means and for responsively producing an output signal indicative of transmission loss through said mounted sheet material;

wherein said monitoring means is connected to each pair of microphones of each of said first and second pressure gradient detecting means and includes means for differentiating the detection signal from the microphones in each pair and means for outputting a signal indicative of an integration of each differentiated signal.

4,397,188
PIEZOELECTRIC RESONANT CONTACT SENSOR

Ramutis J. Bansevichus, Kaunas; Vladas-Algis A. Gapshis, Vilnjus; Albinas J. Kasparaitis, Vilnjus; Viktor V. Perfilov, Vilnjus, and Alvidas J. Ragauskas, Vilnjus, all of U.S.S.R., assignors to Experimentalny Nauchno-Issledovatelsky Institut Metallorezhuschikh Stankov Ennis Vilnjussky Filial, Vilnjus, U.S.S.R.

PCT No. PCT/SU80/00096, § 371 Date Jul. 5, 1981, § 102(e) Date May 1, 1981, PCT Pub. No. WO81/01334, PCT Pub. Date May 14, 1981
PCT Filed May 30, 1980, Ser. No. 261,166
Claims priority, application U.S.S.R., Nov. 5, 1979, 2830457
Int. Cl.³ G01H *13/00*
U.S. Cl. 73—651 8 Claims



1. A piezoelectric resonant contact sensor, comprising
an enclosure in the form of a hollow body of revolution, said enclosure having an external surface and an outer diameter;
a hollow piezoelectric vibration exciter which reproduces the shape of said enclosure and is disposed within said enclosure in a manner providing an acoustic contact, said piezoelectric exciter having an inner surface;
a grounded electrode interposed between said enclosure and said piezoelectric exciter;
an exciting electrode disposed on the inner surface of said piezoelectric exciter;
a sine-wave generator having an output connected to said exciting electrode;
a phase detector having a signal input and a control input connected to the output of said sine-wave generator;
at least two rods disposed on said enclosure in such a manner that their axes are normal to said external surface thereof;
at least two contact lugs secured to the free ends of said rods in a manner providing acoustic contact with said enclosure and forming in conjunction with said rods, said enclosure and said piezoelectric exciter a common oscillatory system wherein the self-oscillation frequency of said enclosure with said rods and said contact lugs is equal to the oscillation frequency of a sine-wave electrical signal; and
a measuring electrode disposed on the inner surface of said piezoelectric exciter and connected to the signal input of said phase detector, said measuring electrode being adapted to provide an output electrical signal, a variation of whose phase relative to the phase of said sine-wave signal fed from the output of said sine-wave generator is indicative of the moment at which said contact lug contacts a part to be measured, each of said rods having a length L determined by the expression:

$$L = l_0 + l_1$$

wherein
l_0 is the distance between the external surface of said enclosure and the nodal point "a" of oscillations of said rod,

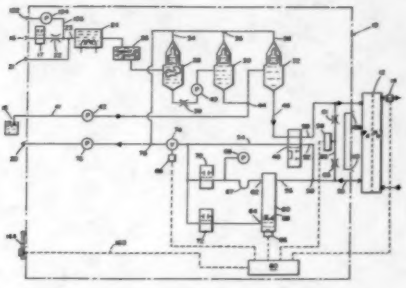
$$l_1 = \frac{C}{4f_0}(1 + 2n),$$

C is the speed of sound in the material of said rods,
f_0 is the self-oscillation frequency of said common oscillatory system, and
n=0, 1, 2 . . . .

4,397,189
MEASURING LOW FLOWRATES

Steven H. Johnson; Thomas P. Grover, both of Lakewood, and Richard M. Kenshalo, Denver, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Apr. 28, 1981, Ser. No. 258,381
Int. Cl.³ G01F *13/00*
U.S. Cl. 73—861 22 Claims



1. Apparatus for making a measurement of the flowrate of a flowing liquid subject to short-term variations in flowrate comprising
a vertically-positioned collection tube with a known volume-versus-height relationship,
means for directing said flowing liquid into said collection tube,
means for periodically generating electrical signals representing the height of the surface of said liquid in said tube at different times while said height is increasing during a collection interval in which there are short-term variations in flowrate, and
means for receiving said signals and determining the time-averaged flowrate value at the end of said collection interval based on a succession of height-versus-time data taken during said collection interval to avoid distortion of flowrate value owing to said short-term variations.

4,397,190
APPARATUS AND METHOD FOR DETERMINING FLOW CHARACTERISTICS OF A FLUID

Jean-Pierre Hulin, Saint-Maur, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

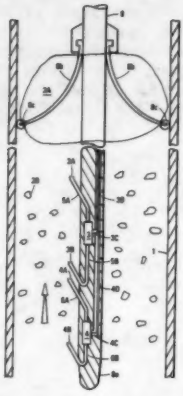
Filed Dec. 18, 1980, Ser. No. 217,620
Claims priority, application France, Dec. 28, 1979, 79 31910
Int. Cl.³ G01F *1/34, 1/74*
U.S. Cl. 73—861.04 11 Claims

1. An apparatus for producing signals indicative of at least one flow characteristic of a polyphase or turbulent single-phase fluid flowing in a well, comprising:
a first differential pressure sensor, including a differential pressure transducer and two sensitive points each responsive to local pressure variation in said fluid, for obtaining a detection signal representative of the instantaneous fluctuations of the pressure gradient in a portion of said fluid therebetween;
a second differential pressure sensor, including a differential

pressure transducer and two sensitive points each responsive to local pressure variation in said fluid, for obtaining a detection signal representative of the instantaneous fluctuations of the pressure gradient in a portion of said fluid therebetween; and

an elongated support structure, adapted for displacement in the well, to which the sensitive points of said first and second sensors are fixedly connected:

in a linear arrangement substantially parallel to the direction of fluid flow and within a core portion of said fluid flow; and



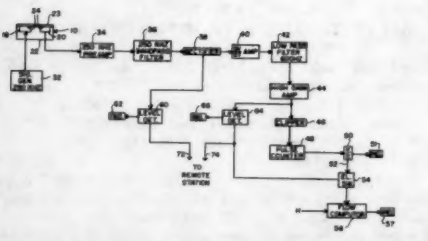
at respective levels separated by consecutive intervals, a first median level being defined intermediate the respective levels of the sensitive points of said first sensor and a second median level being defined intermediate the respective levels of the sensitive points of said second sensor; the distance between said first median level and said second median level being no less than one-third the length of one of said consecutive intervals that is no smaller than any other of said consecutive intervals; and the distance between said first median level and said second median level being between a half-diameter and one diameter of the well.

4,397,191

LIQUID VELOCITY MEASUREMENT SYSTEM

Christopher A. Forden, 1106 Hewitt St., Huntsville, Ala. 35805

Filed Nov. 27, 1981, Ser. No. 325,110
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.18 **4 Claims**



1. A measurement system for measuring flow of a liquid through a channel comprising:

transducer means oriented and positioned in a lower region of the inside of a channel to transmit and receive acoustic energy between said transducer means and an upper surface of the fluid and along a path which is essentially normal to the direction of flow through the channel;

said transducer means comprises transmit and receive, side by side, transducers;

signal generating means for applying an ultrasonic signal to said transmit transducer, wherein an acoustic signal is emitted along said path to the surface of the fluid and reflected back to said receive transducer;

signal amplification means responsive to the output of said receive transducer for providing an amplified version of the output of said receive transducer over a selected frequency range;

signal detection means responsive to the output of said amplification means for providing as an output modulation appearing on said signal;

filter means responsive to the output of said detection means for providing as an output signals within a selected frequency range;

amplitude limiting means responsive to the output of said filter means for providing output pulses corresponding to signal variations of a selected magnitude;

pulse counting means responsive to the output of said amplitude limiting means for providing an output proportional to the frequency of output pulses; and

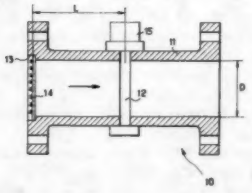
velocity computation means responsive to the output of said pulse counting means for providing as an output an indication of velocity flow through said channel.

4,397,192

VORTEX FLOWMETERS

Jean-Paul Mollet, La Celle-Saint-Cloud, France, assignor to Flonic S.A., Montrouge, France

Filed Apr. 6, 1981, Ser. No. 251,454
Claims priority, application France, Apr. 11, 1980, 80 08117
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 **4 Claims**



1. A vortex fluid flowmeter comprising: circular conduit means having an internal diameter D; an obstacle disposed within said conduit means transversely thereof for generating vortices in fluid flowing through said conduit means; sensor means responsive to the emission of said fluid; a mesh structure disposed within said conduit means perpendicular to the direction of the fluid on the upstream side of said obstacle wherein said mesh structure is a grid made of bars rectangular in cross-section placed at a distance from said obstacle comprised between about D and 5 D said grid having a ratio of thickness parallel to the fluid flow to the mesh size in the range between about 0.16 and about 0.28.

4,397,193

TRANSDUCER DRIVE CIRCUIT FOR ULTRASONIC FLOWMETER

Matthew C. Ryan, Lansdale, and Daniel J. Soltz, Norristown, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 7, 1981, Ser. No. 251,753
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.28 **2 Claims**

1. An ultrasonic flowmeter provided with upstream and downstream transducers placed in a flow pipe, each trans-

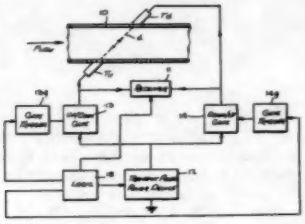
ducer, when excited, generating an acoustic pulse which is propagated through the fluid passing through the pipe before being detected by the other transducer, and a drive arrangement to alternately excite the transducers, said arrangement comprising:

A. a pulse power generating device, which when activated, generates a power pulse for exciting either transducer;

B first and second gates coupling the device to the respective upstream and downstream transducers;

C. a gate driver associated with each gate;

D. logic means to periodically activate the device to produce power pulses and to alternately activate the gate drivers



whereby the power pulses are applied through alternate gates to excite one transducer and then the other, said logic means being arranged to activate each gate driver before it activates the power device, whereby any turn-on delay exhibited by the gate associated with the driver has no effect on the timing of the excited transducer; and

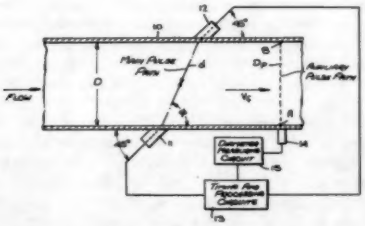
E. receiver means responsive to the acoustic pulses received by the transducers to determine the time delay difference between the upstream and downstream transit times; said receiver being activated by said logic means at a point in time after it activates the power device so that the receiver discriminates against signals other than the received acoustic pulses.

4,397,194

ULTRASONIC FLOWMETER INCLUDING MEANS TO MEASURE PIPE GEOMETRY

Daniel J. Soltz, Norristown, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 7, 1981, Ser. No. 251,928
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.28 **7 Claims**



1. An ultrasonic flowmeter for measuring the flow rate of a fluid conducted through a pipe whose internal diameter is not exactly known, the flowmeter comprising:

A. a pair of transducers mounted on the exterior of said pipe at upstream and downstream positions;

B. means to alternately excite the upstream and downstream transducers whereby an acoustic pulse emitted by the excited transducer is propagated through the fluid along a path within the pipe whose length depends on the distance between the transducers at an angle to the longitudinal flow axis of the pipe and is received by the other transducer;

C. a flow rate measuring system coupled to the transducers to determine the time delay differences between the upstream and downstream transit times along said path to derive therefrom the flow velocity of the fluid;

D. means to generate an auxiliary acoustic pulse that is propagated in a direction normal to the flow axis to produce a first echo at the interface of the inner surface of the pipe and the fluid on one side of the pipe and a second echo at the interface of the inner surface of the pipe and the fluid at the diametrically-opposed side; and

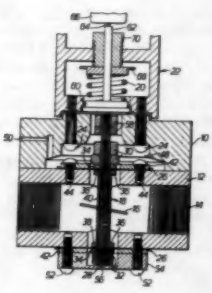
E. means to detect said first and second echoes and to measure the difference between the travel times of said echoes to determine the inner diameter of the pipe and to apply the value thereof to said flow rate measuring system whereby said inner diameter can be factored into the flow rate measurement to determine the actual length of the path within the pipe.

4,397,195

FLOW SENSING DEVICES

Terence J. Hayward, Thirsk, England, assignor to HNL Instruments & Controls Limited, Essex, England

Filed Jul. 16, 1981, Ser. No. 284,094
Int. Cl.³ G01F 1/28
U.S. Cl. 73—861.74 **8 Claims**

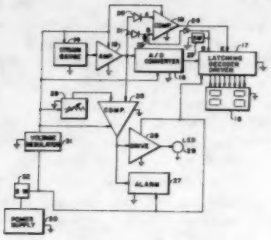


1. A flow sensing device comprising a conduit for the flow, a shaft extending across said conduit, a flow deflecting member carried by said shaft, said conduit being formed with a hole in each side, said shaft extending through each of said holes, and further comprising respective flexible support and sealing members for supporting said shaft in an axial and a radial direction of said shaft at each side of said conduit; said flow deflecting member being so shaped that flow through said conduit will exert on said flow deflecting member a force having at least a component directed axially of said shaft; said flexible support and sealing members also serving to seal said holes in said conduit against fluid flow from the interior of said conduit through said holes, while the flexibility of said support and sealing members permits axial movements of said shaft with said flow detecting member; and said support and sealing members being so dimensioned that pressure force due to the static pressure within said conduit acting on one of said support and sealing members and tending to move said shaft axially in one direction is balanced by an equal but opposite pressure force due to the static pressure within said conduit acting on the other of said support and sealing members.

4,397,196
ELECTRONIC TOOL AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 70,873, Aug. 29, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 302,198
Int. Cl.³ B25B *23/14*
U.S. Cl. 73—862.23 9 Claims

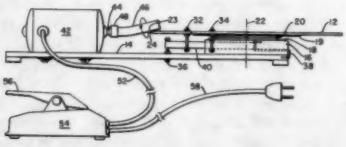


1. A wrench comprising in combination:
handle means,
fastener retaining means connected to said handle means for retaining a fastener adapted to be turned thereby so as to permit said wrench to tighten said fastener,
an electronic force detection means supported by said wrench for detecting torque created when said fastener holding means engages the fastener head and said handle means turns said fastener retaining means against the resistance to the turning of the fastener,
battery means supported by said wrench,
a normally open switch for connecting said battery means to said torque detecting means,
means for closing said normally open switch when torque is applied through said fastener retaining means to the fastener to provide electrical energy from said battery means to power said electronic force detection means for detecting torque applied by said wrench to a fastener held by said fastener retaining means, and
electrically operated display means supported by said wrench and connected to receive signals from said electronic force detection means for displaying the degree of torque applied by said handle means to said fastener retaining means when said normally open switch means is closed by torque applied through said fastener retaining means to said fastener and power from said battery means is applied to power said electronic force detection means.

4,397,197
REVERSIBLE RIM DRIVE MECHANISM

Stoddard Jenney, 78 Summer St., Weston, Mass. 02193

Filed Dec. 23, 1980, Ser. No. 219,584
Int. Cl.³ F16H *15/00*
U.S. Cl. 74—202 10 Claims

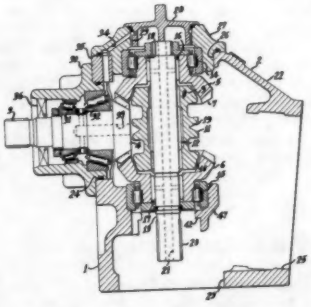


1. A drive mechanism having, in combination,
a driven member having a rim defined by a pair of surfaces on opposite sides thereof,
means to support the driven member for movement in either of two opposite directions to cause the rim to move progressively through a predetermined position,
a rotary drive motor having a shaft and an elastic elongate drive member mounted on the shaft coaxially therewith, the drive member having a free end,
and means to support the drive motor in a location for interfering engagement between said free end of the drive member and one of said surfaces at said predetermined position, the drive member including means to bend resiliently and longitudinally from one of said sides to the other while said drive motor remains in said location to cause the drive member to make frictional engagement with either of said surfaces.

4,397,198
MARINE TRANSMISSION ASSEMBLY SYSTEM

Kjell-Idar Borgersen, Hjalteby, and Lennart H. Brandt, Fjaras, both of Sweden, assignors to AB Volvo Penta, Goteborg, Sweden

Filed May 20, 1980, Ser. No. 151,626
Claims priority, application Sweden, May 23, 1979, 7904535
Int. Cl.³ F16H *3/08, 57/02*
U.S. Cl. 74—378 20 Claims



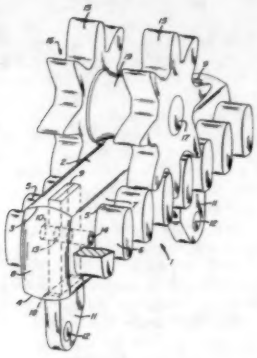
1. A reversing clutch drive assembly adapted for attachment thereto of alternative selected gear transmission subassemblies comprising a horizontal input shaft extending from an external input connection end to an opposite end, a first bevel gear wheel on said opposite end, a housing member having a horizontally extending hollow sleeve portion through which said shaft extends, an oil seal between said shaft and sleeve, a first bearing in said sleeve mounting said shaft and disposed between said seal and said gear wheel, a vertical intermediate shaft disposed in alignment with said horizontal shaft, two bevel gears mounted on said vertical intermediate shaft and rotatable with respect thereto, disposed respectively above and below and each in mesh with said first bevel gear wheel, clutch means for disengaging and selectively drivingly coupling the upper or the lower of said two bevel gears to said vertical intermediate shaft, a housing body portion connected to said housing member, second and third bearings within said body portion mounted on said vertical intermediate shaft, respectively above said upper bevel gear and below said lower bevel gear, said body portion being provided with a side opening opposite said housing member and a bottom opening below said third bearing, said vertical intermediate shaft extending below said lower bevel gear in said bottom opening and adapted for operative connection to gear transmission means for transmitting power selectively through said bottom opening or through said side opening.

4,397,199

GEAR RACK FOR A MINING MACHINE

Dieter Jahn, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H., Bochum, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,540
Int. Cl.³ F16H 1/04
U.S. Cl. 74—422 3 Claims



1. In combination with a mining machine adapted to move along a conveyor, a rack comprising a plurality of rack segments supported end-to-end for limited lengthwise movement along the conveyor, said mining machine including a drive means having spaced-apart spur gear drive wheels for meshing with gear teeth on opposite sides of said rack segments each of which comprises an elongated rack body having a rectangular cross section with arch-shaped upper and lower surfaces along the length thereof, opposite end portions of said rack body having a vertical hole along the height thereof intersecting a horizontal hole extending across the width of the rack body within a horizontal plane of symmetry thereof, and attachments projecting at uniformly-spaced intervals from opposite lateral sides of said rack body and rigidly attached thereto symmetrically with respect to said horizontal plane of symmetry, each attachment having involute toothed flanks extending upwardly and downwardly from said horizontal plane of symmetry such that inverting a rack segment 180° relocates downwardly-extending toothed flanks of the rack segment to extend upwardly for driving engagement with said spur gear drive wheels of said mining machine.

4,397,200

SHIFT LEVER HANDLE STRUCTURE AND EQUIPPING METHOD

Edward R. Reynolds, 335 N. Adams St., Glendale, Calif. 91206

Filed Jul. 20, 1981, Ser. No. 285,167
Int. Cl.³ B60K 20/00; G05G 13/00; B23P 11/00, 19/00
U.S. Cl. 74—473 R 10 Claims

1. A method of equipping, with an elongate handle, a shift lever having on top thereof a shift range selector having pneumatic lines connected thereto, comprising in combination the steps of:

providing said handle with a bent stem having an elongate foot facing away from a midportion of said elongate handle;

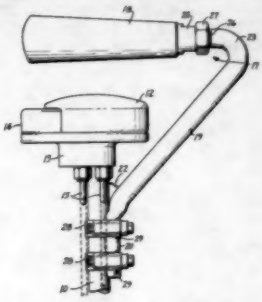
orienting said elongate foot parallel to said shift lever; and

attaching said parallel foot to a side of said shift lever below said shift range selector, with said handle then extending above said shift range selector across thereof, and said pneumatic lines remaining intact.

8. In apparatus for shifting gears in a vehicle with a shift lever having a shift range selector on top thereof, the improvement comprising in combination:

a handle extending above and across said shift range selector;

a bent stem for said handle having an elongate foot facing



away from a midportion of said handle and adapted to extend parallel to said shift lever; and

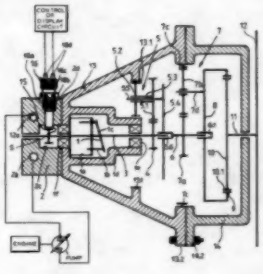
means attaching said parallel foot to a side of said shift lever below said shift range selector.

4,397,201

HYDROSTATIC-MECHANICAL DRIVE FOR SELF-PROPELLED MACHINES

Egon Mann, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,822
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943281
Int. Cl.³ F16H 47/00
U.S. Cl. 74—730 5 Claims



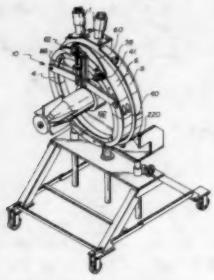
1. In a vehicle transmission to drive a working load or to propel the vehicle by rotating a wheel forming the load, wherein the transmission comprises a hydrostatic motor having an output shaft and a cylinder drum communicating with a pump through a valve plate, said shaft being mechanically connected to said load, the improvement which comprises a metal gear wheel mounted on said shaft and lying wholly within said plate and having a circumferential array of teeth, and an inductive sensor received in said plate and juxtaposed with the periphery of said wheel wholly within said valve plate for generating a pulse train for application to an electric circuit.

4,397,202

UNIVERSAL PIPE LATHE

Johnny W. Mayfield, Placerville, and Roger W. Totten, Sepulveda, both of Calif., assignors to Machine Cutting, Inc., Sepulveda, Calif.

Filed Aug. 20, 1980, Ser. No. 179,789
Int. Cl.³ B23B 5/08, 5/16
U.S. Cl. 82—4 R 49 Claims



1. A universal lathe for performing plural diverse cutting operations on pipe and the like, comprising, in combination:

clamping means for affixing said lathe to the pipe,

a first stationary ring member interposed between said clamping means and said lathe,

a second rotating ring member overlying a portion of said first ring and supported thereon along a bottom face of said second ring,

drive means on said first ring including an output means,

a ring gear on a first side face of said second ring member in meshing engagement with said output means,

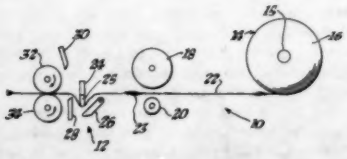
cutting means carried by said second ring member whereby when said second ring member rotates, said cutting means engages the pipe, a follower means operatively associated with said cutting means adapted to advance said cutting means including at least one cam surface on said first stationary ring member, said follower means disposed on said second rotating ring member oriented to travel over said cam surface, and fluidic pulse means extending between said follower means and said cutting means whereby fluidic pulses generated by said follower means traveling over said cam surface similarly indexes said cutting means for advancement thereof by indexing means.

4,397,203

TOWEL CUTTING MACHINE

Frank T. Brack, 87 Laredo La., Boca Raton, Fla. 33431, and Frank B. Brack, 4280 NW. 9th Ct., Pompano Beach, Fla. 33063

Filed Nov. 6, 1980, Ser. No. 204,455
Int. Cl.³ B26D 5/38, 7/14
U.S. Cl. 83—156 4 Claims



1. A towel cutting machine for cutting the entire transverse fringe portion connecting generally rectangular towel sections in a continuous strip of towel material, the fringe portion being generally linear and perpendicular to the longitudinal axis of the strip of towel material, said towel section having two opposed, parallel thickened edges generally perpendicular to the linear fringed portion comprising:

a frame means for housing a control means, a drive feed means, a pull slip-clutch means, a braking-sensing means, and a cutting blade means;

said control means for automatically controlling and repeating the cycle of operation of feeding, sensing, braking, and cutting of said machine connected to said frame;

said drive feed means connected to said frame and said control means for drive feeding the strip of towel material longitudinally downstream along a pathway through said machine with the fringe portions generally perpendicular to the direction of feeding;

said pull slip-clutch drive means for centering and pulling the strip of towel material through said machine connected to said control means, said pull slip-clutch drive means for retaining each rectangular towel section of the strip of towel material in a centered and tensioned position thereby permitting cutting of the entire linear fringe portion generally perpendicular to the longitudinal axis of the strip of towel material;

said cutting blade means and braking-sensing means connected to said frame means and said control means between said drive feed means and said pull slip-clutch drive means, said cutting blade means located between said slip-clutch drive means and said braking-sensing means;

said braking-sensing means for locating the linear fringe portion between each towel section on the strip of towel material and for fixing the position of the fringe portion generally perpendicular to the longitudinal axis of the strip of towel material on said machine between said braking-fringe sensing means and said pull slip-clutch drive means adjacent to said cutting blade means;

said control means for first operating said drive feed means into a towel strip material engaging position and moving the strip material through said machine and into said pull slip-clutch means with said cutting blade means and said braking-sensing means in open nonengaging position and for thereafter engaging said pull slip-clutch means;

said control means for then operating said drive feed means and said braking-sensing means into an engaging position and feeding the towel strip material until the braking-sensing means senses the fringe portion and engages the fringe portion;

said control means for thereafter activating said cutting blade means while said pull slip-clutch drive means in a slip condition maintaining non-slip tension on the towel strip material without rotating to cut the fringe portion of a towel section of the towel strip material; and

said control means for automatically returning said cutting blade means to the nonengaging position and for activating said drive feed means if desired another cycle of operation.

4,397,204

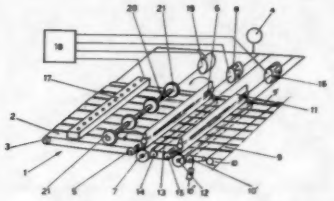
ROTARY SHEETERS TO SUIT THEM TO THE CUT OF WOOD VENEERS

Aristide Colombo, Monza, Italy, assignor to Colombo & Cremona S.A.S., Milan, Italy

Filed Jan. 7, 1981, Ser. No. 223,098
Claims priority, application Italy, Jan. 14, 1980, 19216 A/80
Int. Cl.³ B27L 5/08
U.S. Cl. 83—289 7 Claims

1. A rotary sheeter for cutting wood veneer material in sections, comprising a first conveyor belt for advancing the material towards a cutting zone; a main multiple edge rotary blade and a first holding-up roller mounted at the cutting zone and cooperating with said main blade to cut the material in a minimum length depending on an arc between two successive cutting edges of said main blade; motor drive means; first friction clutch means connected between said drive means and

said main blade to operate the latter; a scanning device for inspecting the advancing material surface to detect possible imperfections thereon and generating signals in accordance with those imperfections; an electronic device for receiving the signals from said scanning device and storing said signals; an incremental pulse generator connected to said electronic device and operative for measuring the length of the passing sheet materials and controlled by said electronic device to operate said first friction clutch means; a rotary auxiliary multiple edge blade extended parallel to said main blade and being spaced therefrom in the direction of advancing of the sheet material; an auxiliary holding-up roller cooperating with said auxiliary blade; second friction clutch means connected to said



motor drive means and to said auxiliary blade and electrically connected to said electronic device to operate said auxiliary blade to execute a cut intermediate a section of the material advanced from said main blade, said second friction clutch means being controlled by a signal generated by said electronic device and said incremental pulse generator when said scanning device detects the imperfections on the advancing material, so that said electronic device takes into consideration the spacements between said scanning device, said main blade and said auxiliary blade and said auxiliary blade is operated to execute said intermediate cut on the passing section of said material to cut a traversal strip containing an imperfection from said section.

4,397,205

ALIGNING AND MEASURING DEVICE FOR ROLLED PLATE

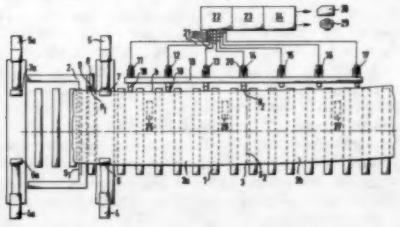
Hartmut Kirstein, Solingen, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 29, 1981, Ser. No. 268,241

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1980, 3021826

Int. Cl.³ B23D *36/00*

U.S. Cl. 83—364 **6 Claims**



1. In apparatus for transversely cutting rolled metal plate comprising cutting means and plate support and conveying means defining a plate path to and through said cutting means, the improvement comprising, for aligning plates with arcuate side edges:

a lateral abutment adjacent to the cutting means on the upstream side of the latter relative to the said plate path, which abutment is disposed at one side of said plate path and is adapted to abut on and locate in a predetermined lateral position a selected side edge of a said plate,

a plurality of measuring sensors on the upstream side of the cutting means, disposed adjacent to the said path at the same side thereof as the said abutment, spaced apart along the said path and each adapted to sense the position of the selected side edge of the plate, and a plurality of aligning elements disposed upstream of the cutting means for laterally adjusting the position of the said plate, each said aligning element comprising a plate entraining member mounted for vertical movement into and out of engagement with said plate and for movement transversely to the said plate path.

4,397,206

FOOD SLICER

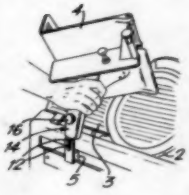
Ferenc L. Czala, Newbury, England, assignor to Lan-Elec Limited, Berkshire, England

Filed Jun. 4, 1981, Ser. No. 270,402

Claims priority, application United Kingdom, Nov. 3, 1980, 8035293

Int. Cl.³ B26D *7/22*

U.S. Cl. 83—399 **9 Claims**



1. A food slicer comprising a rotatable circular knife, a food hopper, a carriage, guide means guiding said carriage and thereby said hopper from an initial position towards and across said knife to cut food on the hopper into slices, a gauge plate mounted parallel to said knife to adjust the thickness of cut as the hopper moves the food past the knife and a safety device comprising, a first latch which engages the hopper to retain it on said carriage and a release mechanism engagable with said latch when the hopper is in said initial position to release the latch only when the gauge plate is in line with said circular knife.

4,397,207

SHEET METAL CUTTING DEVICE FOR ARCS AND CIRCLES

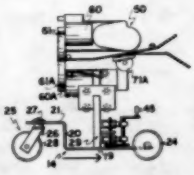
Dalton Isaac, Box 38, Rosenort, Manitoba, Canada

Filed Dec. 1, 1980, Ser. No. 211,700

Claims priority, application Canada, Feb. 25, 1980, 346325

Int. Cl.³ B23D *19/08, 33/04*

U.S. Cl. 83—490 **11 Claims**



1. An arc or circle cutter for sheet metal and including a supporting surface for supporting at least part of the sheet being cut; comprising in combination a ground engaging wheeled dolly situated in a plane spaced below and outboard of said supporting surface, supporting structure supported on

said dolly including a base, an adjustable trammel assembly extending from said supporting structure and engageable with the sheet at the centre of the arc or radius being cut, upper and lower shear cutter assemblies mounted upon said supporting structure for cutting action upon said sheet being cut, means to drive said cutter assemblies, and means to adjust the height of said upper and lower shear cutter assemblies relative to said dolly, said last mentioned means including a pair of supporting pillars secured to and extending upwardly from said base, a central pillar mounted for vertical movement between said support pillars, guide rollers cooperating between said support pillars and said central pillar and jack means on said base operatively connected to said central pillar to raise and lower said central pillar relative to said support pillars, a table mounted on said central pillar, said table and said upper and lower shear cutter assemblies being supported upon said central pillar and being raised and lowered therewith.

4,397,208

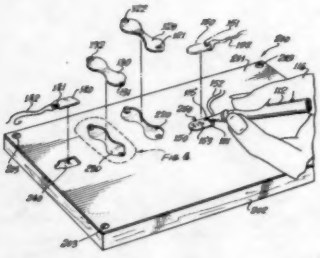
JEWELRY TAG MARKING METHOD

B. R. Stalhut, P.O. Box 2326, Stateline, Nev. 89449

Filed Oct. 17, 1979, Ser. No. 85,634

Int. Cl.³ B26D *3/08*

U.S. Cl. 83—880 **2 Claims**



1. The method for marking jewelry tags comprising: providing a work base; providing openings within a sheet of stainless steel of approximately the same thickness as jewelry tags, each of which openings is suitable to accomodate a jewelry tag; affixing said sheet of stainless steel to said work base; placing a tag of the appropriate shape within each of said openings in said sheet of stainless steel; marking each of said tags with a marking device; and removing each of said tags from each of said openings.

4,397,209

METHOD OF DETERMINING CHORD TYPE AND ROOT IN A CHROMATICALLY TUNED ELECTRONIC MUSICAL INSTRUMENT

Christian J. Deforeit, Trossingen, Fed. Rep. of Germany, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,986

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023578

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **11 Claims**

1. A method of determining the type and root of a chord played on a chromatically tuned musical instrument and comprising at least three notes, said method including the steps of:

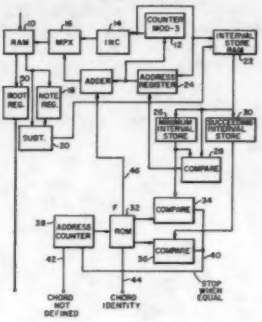
assigning sequential numerical note values to the notes of the chromatic scale;

determining and storing said note values which correspond to the notes of an actually played chord;

determining the intervals between successive adjacent pairs of notes of said actually played chord;

selecting the smallest of the determined intervals and at least the determined interval immediately succeeding the smallest determined interval;

comparing the selected intervals with tabulated interval information stored in a table corresponding to defined chord types to identify the chord; and



determining the chord root by sequentially counting from the stored note which started the smallest interval by a number of stored notes as defined by a characteristic digit from said table commensurate with the identified chord.

4,397,210

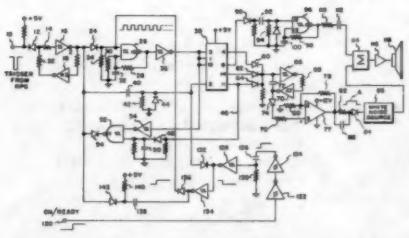
RHYTHM SOUND GENERATOR

Robert A. Finch, Mundelein, Ill., assignor to CBS Inc., New York, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,964

Int. Cl.³ G10H *1/08, 1/42, 5/00*

U.S. Cl. 84—1.03 **10 Claims**



1. For use in an electronic organ including a rhythm pattern generator which produces sequences of trigger pulses, each sequence characteristic of a particular rhythm, and a loudspeaker for acoustically reproducing electrical signals generated within the organ, an electronic circuit for producing an electrical signal which when reproduced by the loudspeaker simulates the sound produced when a group of persons clap hands substantially in unison, said circuit comprising:

timing circuit means connected to receive a selected sequence of trigger pulses from said rhythm pattern generator for producing a group of trigger signals in timed relationship to each trigger pulse in the said selected sequence and to each other,

at least first and second sound signal sources for respectively producing in response to an applied trigger signal first and second signal bursts of differing tonal characteristics, said first sound signal source comprising a source of random noise,

means for applying at least one trigger signal of the said group to each of the sound signal sources for causing said sound signal sources to produce a group of signal bursts of differing tonal characteristics in timed relationship to each

trigger pulse in the said selected sequence and to each other,

means for combining the signal bursts produced by the said at least first and second sound signal sources and producing said electrical signal and

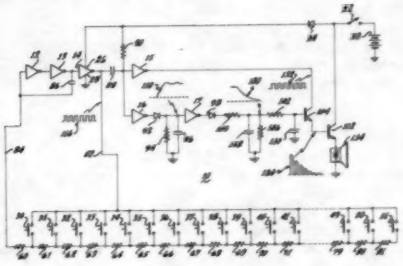
means for applying said electrical signal to the loudspeaker.

4,397,211

CIRCUIT FOR PRODUCING MUSICAL TONES

Scott A. Ferdinand, Denver, Colo., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 30, 1981, Ser. No. 335,783
Int. Cl.³ G10H *1/055, 1/22*
U.S. Cl. 84—1.26 **4 Claims**



1. A circuit for producing musical tones comprising:

keyboard means responsive to an external command for selecting musical tones to be generated by the circuit;

tone generator means responsive to the keyboard means for generating a square wave signal only when the external command is present, the square wave signal having the frequency of the musical tone to be generated;

a first capacitor;

charging means responsive to the square wave signal for charging the first capacitor to a predetermined level of voltage when the square wave signal is terminated and for exponentially discharging the first capacitor when the square wave signal is initiated, including

a first inverter having input and output terminals,

means for connecting the input terminal of the first inverter to a high level DC bias source,

means for AC coupling the input terminal of the first inverter to the square wave signal,

a second capacitor,

means for connecting the output terminal of the first inverter to the second capacitor whereby the second capacitor is charged when the square wave is initiated and the second capacitor is discharged when the square wave signal is terminated,

a second inverter having input and output terminals,

means for applying the voltage appearing across the second capacitor to the input terminal of the second inverter, and

means for connecting the output terminal of the second inverter to the first capacitor whereby the first capacitor is charged to the predetermined level of voltage when the second capacitor is discharged, and the first capacitor is discharged when the second capacitor is charged;

modulation means response to the square wave signal and the first capacitor voltage for amplitude modulating the square wave signal in proportion to the first capacitor voltage to produce an exponentially decaying signal; and

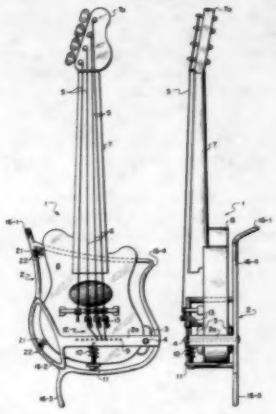
speaker means responsive to the exponentially decaying signal for providing audible musical tones.

4,397,212

COMBINATION GUITAR VIBRATO AND PITCH CONTROL

David L. Carson, 2671 Evergreen St., San Diego, Calif. 92106

Filed Jan. 19, 1981, Ser. No. 340,773
Int. Cl.³ G10D *3/12*
U.S. Cl. 84—313 **13 Claims**



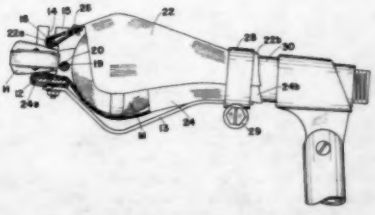
1. In a stringed instrument having a head, a neck, a body rigidly connected to the neck on which is mounted a bridge, and a plurality of strings each connected at one end to said head and extending along said neck over said bridge, the improvement comprising: an instrument supporting, rigid frame positioned exterior of said instrument and mounted thereto by a pivot substantially perpendicular to a plane generally containing said strings, at least some selected strings being connected at their other ends to a part of the frame functioning as a lever arm, another part of the frame functioning as a torque balancing means for torques due to the movement of the instrument with respect to the frame in both directions in said plane about said pivot whereby the natural swinging movement of the instrument, by the musician during playing, about said pivot relative to the frame will vary the length, and therefore the tension on the selected strings to produce sustained pitch changes and/or desired vibrato sounds.

4,397,213

HARMONICA HOLDER AND SHROUD

Dana L. Hubbard, 21060 E. Fifth St., Sonoma, Calif. 95476

Filed Jul. 16, 1982, Ser. No. 398,985
Int. Cl.³ G10G *5/00*
U.S. Cl. 84—453 **5 Claims**



1. A harmonica support comprising:

a generally horizontal base plate;

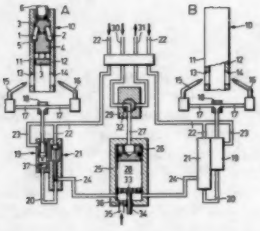
a generally horizontal pressure bar carried above said base plate for movement toward and away from said base plate;
spring means biasing said pressure bar toward said base plate to clamp a harmonica therebetween;
a top wrap and a bottom wrap of a relatively heavy sheet material shaped generally as isosceles triangles with the bases thereof folded over and secured to said pressure bar and said base plate, respectively;
a microphone being receivable between said top and bottom wraps; and
an adjustable clamping sleeve receivable over the trailing relatively narrow ends of said top and bottom wraps and the handle of a microphone received therebetween.

4,397,214

APPARATUS FOR LUBRICATING THE LOCKING BOLTS OF A BREECHBLOCK OF AN AUTOMATIC FIRING WEAPON

Peter Mannhart, Hochdorf, and Bruno Ruppen, Zürich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Aug. 17, 1981, Ser. No. 293,271
Claims priority, application Switzerland, Sep. 2, 1980, 6587/80
Int. Cl.³ F41D *3/00, 11/00*
U.S. Cl. 89—1 E **2 Claims**



1. An apparatus for lubricating the locking bolts of a breechblock of an automatic firing weapon during each firing of a round or a series of rounds, comprising:
a supply container for a lubricant within which said lubricant is maintained at a substantially constant hydraulic pressure;
a dosing device operatively connected with said lubricant supply container;
said dosing device containing a hydraulically actuated piston for dosing the lubricant;
means for hydraulically actuating said piston;
a hydraulically releasable valve means operatively connected with said dosing device;
said releasable valve means, upon release thereof, permitting passage of a dosed quantity of lubricant;
a respective lubricant injection nozzle arranged to each side of a breechblock housing of the firing weapon; and
said releasable valve means being operatively connected with said injection nozzles, in order to inject lubricant through openings of the breechblock housing onto the locking bolts of the breechblock.

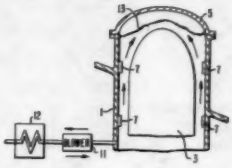
4,397,215

SYSTEM FOR CONTROLLING THE TEMPERATURE OF THE UPPER END OF A MISSILE

Vernon Stroud, Palo Alto, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 6, 1981, Ser. No. 232,288
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.816 **8 Claims**

1. A system for controlling the temperature of the upper end of a missile disposed in a launch tube having its upper end closed by a hatch, the system comprising:
a port in the launch tube disposed below the hatch;
means for supplying and removing fluid from said launch tube disposed in fluid communication with the port;
a heat exchanger disposed in fluid communication with the fluid supply and removing means;



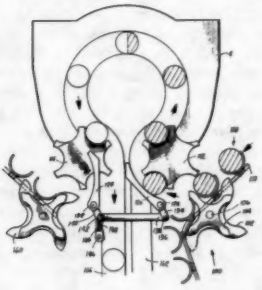
a diaphragm disposed below the hatch;
a peripheral seal at the junction of the diaphragm and the launch tube whereby fluid is passed over the upper end of the missile to control its temperature as fluid is alternately supplied and removed from the launch tube.

4,397,216

FEEDER MECHANISM

Douglas P. Tassie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Feb. 2, 1981, Ser. No. 230,564
Int. Cl.³ F41D *10/06*
U.S. Cl. 89—33 CA **21 Claims**



1. A side-stripping feeder for linked rounds of ammunition comprising:
first guide means for positively guiding a train of links along a first path with the open sides of the links all facing in a first direction and the closed sides of the links all facing in a second direction;
second guide means for positively guiding a train of rounds of ammunition along a second path which is initially coextensive with said first path and subsequently, at a divergence, diverges from said first path towards said first direction;
first drive means journaled for rotation about a first axis for positively engaging each of the links in sequence adjacent said divergence for positively driving each such link along said first path through said divergence;
second drive means journaled for rotation about said first axis for positively engaging each of the rounds in sequence adjacent said divergence for positively driving each such round along said second path through said divergence and increasing the pitch between each such round and the next succeeding round as it passes through said divergence; and

third drive means for positively engaging each of the rounds in sequence at said increased pitch and passing the rounds out of said feeder at said increased pitch.

4,397,217

RECOIL AND COUNTER RECOIL MECHANISM FOR A FIREARM

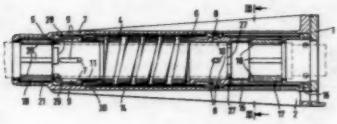
Gerhard Hupp, Oberndorf, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,121

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2944859

Int. Cl.³ F41F *19/06*

U.S. Cl. 89—177 6 Claims



1. A recoil and counter recoil device for a firearm which can fire a plurality of shots in succession, the firearm having a barrel movable in a recoil and counter recoil direction in a receiver, and a breech movable with and with respect to the barrel, comprising:

a recoil spring coaxial with the barrel bearing between the barrel and the receiver for absorbing motion in the barrel in the recoil direction and then moving the barrel in a counter recoil direction;

an annular spring axially fixed to the barrel and radially deformable to absorb a load;

the receiver having a tapered surface portion over which said annular spring is movable when the barrel moves in the counter recoil direction to counteract the effect of said recoil spring;

said tapered surface portion being positioned in the receiver to engage said annular spring during an end period of the counter recoil movement of the barrel.

4,397,218

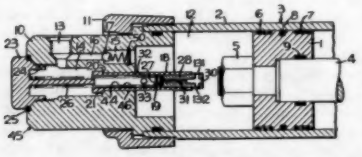
CUSHION STOP FOR HYDRAULIC CYLINDER

Donald K. Spring, Topeka, Kans., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 23, 1980, Ser. No. 219,997

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—26 10 Claims



1. A cushioning device in a hydraulic cylinder comprising, a hydraulic cylinder including a sleeve, a cap removably fastened on the end of said sleeve, a piston reciprocally mounted in said sleeve defining an expansible chamber with said cap, means defining a port in said cap, a check valve in said cap connected between said port and said expansible chamber providing inward flow from said port to said expansible chamber, means defining a plunger chamber connected between said port and said expansible chamber, a plunger received in an opening in said cap and extending into said plunger chamber axially aligned with the reciprocal movement of said piston, resilient means biasing said plunger toward said piston, means defining a central opening in said plunger forming an orifice on an inner end of said plunger communicating with said expansible chamber, radial openings axially spaced along said plunger connected to said central opening selectively closing and restricting fluid flow through said radial openings and limiting flow from said expansible chamber to said port as said plunger is pressed toward said cap as said piston reaches the end of the stroke to thereby provide a cushioning of said piston at the end of its stroke.

4,397,219

BRAKE BOOSTER FOR AUTOMOTIVE VEHICLES

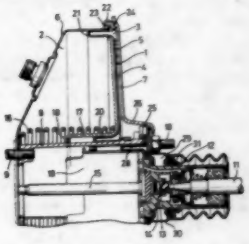
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,691

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010684

Int. Cl.³ F15B *9/10*; F01B *19/00*; F16J *3/02*

U.S. Cl. 91—376 R 4 Claims



1. A brake booster for an automotive vehicle comprising:

a low-pressure casing sealingly subdivided into a low-pressure chamber and a working chamber by an axially movable wall, said working chamber being connectible to one of said low-pressure chamber and atmosphere by a mechanically actuated control valve, said casing including a first casing part adjacent said low-pressure chamber having an outer rim at the periphery thereof and a second casing part adjacent said working chamber, said second casing part being a portion of a splashboard of said vehicle having an outer annular sealing surface and an inner annular sealing surface, said movable wall including a rolling diaphragm having an outer sealing bead embracing said outer rim and in a sealed relationship with said outer sealing surface to seal said first and second casing parts and said movable wall to one another; and

a force-transmitting member axially penetrating said movable wall in a sealed relationship therewith, one end of said member being connected to said first casing part and the other end of said member being connected in a sealed relationship with said inner sealing surface.

4,397,220

AIR CUSHION FOR PNEUMATIC IMPACT TOOL

Mario A. Russo, Edison, and Edward I. Auerbach, Belle Mead, both of N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 4, 1981, Ser. No. 260,019

Int. Cl.³ F15B *15/22*; F01B *11/02*

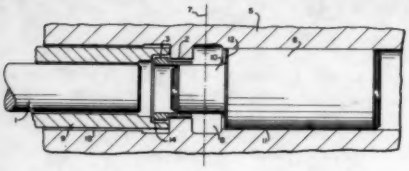
U.S. Cl. 91—408 1 Claim

1. An improved air cushion seal for pneumatic impact tools having a reciprocating free piston with a cushion end disposed in a barrel cylinder having a bridge for retaining the piston at one end comprising:

a seal bushing having an outside diameter of nonuniform

diameter to effect a labyrinth seal disposed in close fitting concentric relationship with said cushion end of said piston when said piston approaches said bridge;

said seal bushing being further disposed in concentric relationship with said barrel cylinder at said bridge and having minimum but appreciable radial clearance between its outer diameter and said bridge so as to allow said seal bushing to concentrically align itself with said cushion end



of said piston while providing a labyrinth seal of substantially restricted flow path along the outside diameter of said seal bushing and of substantially increased length passed said bridge; and

a guide bushing located within said barrel cylinder opposite a portion of said bridge which retains the piston, said guide bushing being counterbored to retain said seal bushing and to form a coacting face seal for said seal bushing.

4,397,221

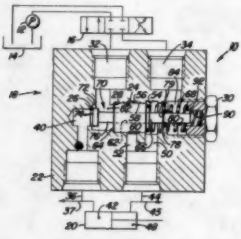
REGENERATIVE VALVE

Henry Friesen, Niagara Falls, and John Rosbak, Fonthill, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Jun. 1, 1981, Ser. No. 269,110

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—420 **14 Claims**



1. In a fluid system having a fluid pressure source, a sump, a directional control valve coupled to the source and the sump, a cylinder having head and rod chambers, and a regenerative valve coupled between the directional control valve and the cylinder, the regenerative valve comprising:

a housing;

a valve bore in the housing;

first and second control passages, each having one end intersecting the valve bore and another end for communicating with the directional control valve;

a first work passage communicating the bore with the head chamber;

a second work passage communicating the bore with the rod chamber;

a poppet seat defined by a portion of the housing separating the valve bore and the first work passage;

a poppet member movable in the valve bore between a closed position wherein the poppet member engages the poppet seat to prevent fluid communication between the first control passage and the first work passage and an open position wherein the poppet member is spaced apart from the poppet seat to permit fluid communication between the first control and first work passages;

a first resilient member biased to urge the poppet member towards the poppet seat;

a valve member movable in the valve bore between a working position wherein the valve member cooperates with the wall of the bore to permit fluid communication between the second control and second work passages and to prevent fluid communication between the second work passage and the first control and first work passages, and a regenerative position wherein the valve cooperates with the wall of the bore to prevent fluid communication between the second control and second work passages and to permit fluid communication between the second work passages and the first work passage, one of the poppet and valve members slidably and coaxially receiving a portion of the other of the poppet and valve members, the valve member including an abutment engageable with a corresponding stop on the poppet member to pull the poppet member away from the poppet seat as the valve member moves from the working to the regenerative positions; and

a second resilient member biased to urge the valve member to the working position.

4,397,222

FLUID POWERED ACTUATOR SYSTEM

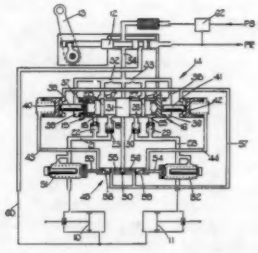
Stanley G. Glaze, Holley Bank, Stream Rd., Kingswinford, Brierley Hill, West Midlands DY6 9P8, England

Filed Jul. 28, 1980, Ser. No. 173,174

Claims priority, application United Kingdom, Aug. 16, 1979, 7928500

Int. Cl.³ F15B *11/22*

U.S. Cl. 91—515 **5 Claims**



1. A fluid powered piston actuator system comprising a pressure source (PS), first and second piston actuators (10,11), first and second valve devices (15, 16) for controlling fluid flow in respective first (21), and second (28) flow paths between said pressure source (PS) and said first and second piston actuators (10, 11), said valve devices (15, 16) including operably interconnected control elements (20, 27), for increasing or decreasing flow through said first flow path (21) and for simultaneously decreasing or increasing flow through said second flow path (28), means (35, 36) responsive to a difference between intermediate pressures in said first and second flow paths (21, 28) for urging said control elements (20, 27) in directions to reduce said difference, third (40) and fourth (42) piston actuators operable in response to a servo pressure signal for moving said control elements (20, 27) in respective opposite directions to a pair of shut off positions at which fluid flow is shut off in both of said first and second flow paths (21, 28), and a control valve (45) in fluid communication with said third (40) and fourth (42) piston actuators, said control valve (45) responsive to a difference in pressures in said first and second flow paths (21, 28) for selectively applying said servo pressure signal to one of said third and fourth (40, 42) actuators and for applying a lower pressure to the other of said third and fourth actua-

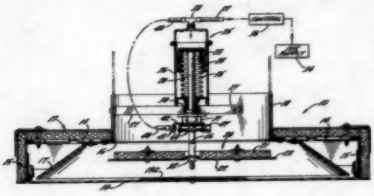
tors (40, 42) to move said elements (20, 27) to one of said shut off positions.

4,397,223

AIR DISTRIBUTOR WITH AUTOMATICALLY CLOSABLE DAMPER

Dale E. Maxson, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Oct. 23, 1981, Ser. No. 314,101
Int. Cl.³ F24F *13/06*; F16K *17/40*
U.S. Cl. 98—40 D **5 Claims**



1. An air distribution unit comprising means defining an air passage, a valve element movable between open and closed positions with respect to said passage, and means for moving said valve element between said positions, said moving means comprising slidably telescoped piston and cylinder members, one of said members being operably connected to said valve element, means for admitting pressure fluid into said cylinder member and for exhausting pressure fluid from said cylinder member, said one member moving said valve element toward said open position when pressure fluid is admitted into said cylinder member, a spring acting on said one member and operable to cause said one member to move said valve element toward said closed position when pressure fluid is exhausted from said cylinder member, the improvement in said air distribution unit comprising, a sensing tube communicating with said cylinder member and normally pressurized by said pressure fluid, first heat responsive means associated with said sensing tube and operable to vent said sensing tube to atmosphere when the temperature adjacent said heat responsive means exceeds a predetermined value whereby the pressure fluid in said cylinder member is exhausted to atmosphere by way of said sensing tube so as to enable said spring to move said valve element to said closed position, a detent movable between latched and unlatched positions relative to said valve element, biasing means urging said detent to said latched position, and second heat responsive means normally holding said detent in said unlatched position against the action of said biasing means and operable to permit said detent to move to said latched position when the temperature adjacent said second heat responsive means exceeds a predetermined value thereby to enable said detent to hold said valve element in said closed position independently of said spring.

4,397,224

SHEET METAL ATTACHMENT SYSTEM AND METHOD FOR INSTALLATION OF MINE BRATTICES

Kenneth G. Walker, Greenville, Ky., assignor to Hilliard-Lyons Patent Management, Inc., Louisville, Ky.

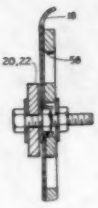
Filed Feb. 13, 1981, Ser. No. 234,865
Int. Cl.³ E21F *1/14*
U.S. Cl. 98—50 **1 Claim**

1. In the installation of a mine brattice having a gas impervious barrier of malleable sheet metal adapted to be deformed into sealing contact about the peripheral inner surfaces of a mine tunnel, and means to support said barrier including a peripheral framework of slotted beams, a method of securing said sheet metal barrier to said framework of slotted beams comprising the steps of:

premounting a plurality of threaded bolts to said slotted beams by drawing bolt mounting nuts along the length of the bolts and against said slotted beams so that the threaded shanks of the bolts project from one side of the framework;

placing the sheet metal adjacent the side of the framework of slotted beams from which the threaded shanks of the bolts project;

forcing the sheet metal over the projecting bolt shanks causing the sheet metal to be pierced by each bolt shank;



placing an apertured washer plate over the bolt shanks projecting through the pierced sheet; and,

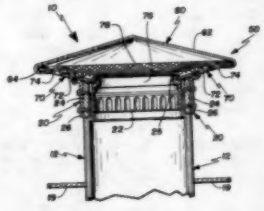
threading a barrier retaining nut on each of the bolt shanks projecting through said washer plates thereby drawing said washer plate against the sheet and the slotted beams forcing the sheet against the bolt mounting nuts causing the sheet to be deformed by the bolt mounting nuts into the washer plate apertures and seized between said bolt mounting nuts and the periphery of the washer plate apertures.

4,397,225

STACK DRAFT STABILIZING DEVICE

Lawrence C. Patton, Minneapolis, Minn., assignor to Perform, Inc., Minneapolis, Minn.

Filed Jun. 25, 1981, Ser. No. 277,178
Int. Cl.³ F23L *17/02*
U.S. Cl. 98—66 R **8 Claims**



1. A device for mounting at the exit end of a draft stack having a specified cross-sectional area to stabilize draft flow from the stack against the effects of ambient wind conditions, comprising:

a first cap member in the form of a concave surface, said surface having a peak angle substantially between 130° and 170°;

a second cap member in the form of a concave surface, said surface having a peak angle substantially between 130° and 170°, said second cap member having substantially the same base size and shape as and being joined to said first cap member at the edges of their respective bases, said second cap member further having

a plurality of outlet openings through its surface near the edge where the first and second cap members are joined together, said outlet openings lying below the edge joining the first and second cap members and having an

aggregate area not less than the specified cross-sectional area of the stack and said outlet openings further being unshielded against winds travelling substantially parallel to the plane at which the edges of the respective bases are joined; and

a stack inlet opening where its peak would be located, which opening is substantially the same size as the specified cross-sectional area of the stack; and

means for connecting said stack inlet opening to the exit end of said stack.

4,397,226

METHOD AND DEVICE FOR EXTRACTING CONTAMINATED AIR BY SUCTION

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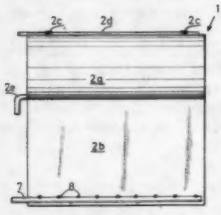
PCT No. PCT/SE80/00147, § 371 Date Jan. 13, 1981, § 102(e) Date Jan. 13, 1981, PCT Pub. No. WO80/02518, PCT Pub. Date Nov. 27, 1980

PCT Filed May 20, 1980, Ser. No. 229,572

Claims priority, application Sweden, May 21, 1979, 7904443

Int. Cl.³ F24F *11/00*

U.S. Cl. 98—115 R **11 Claims**



1. An air extractor for removing contaminated air by suction and arranged to co-act with an air suction device, said extractor comprising: a hollow cylinder having a peripherally arranged inlet slot for directing contaminated air tangentially into said cylinder, said contaminated air forming part of an air stream imparted a rotary movement having an axially directed movement component within said cylinder; discharge means for leading said air stream away from said cylinder; ejector blow-openings arranged opposite said inlet slot for blowing streams of air towards said slot, said streams entraining there with contaminated air, and carrying said air to the air stream rotating in the cylinder; and a tangentially directed wall extension which merges with a wall of said hollow cylinder in the region of said inlet slot and extends to said ejector blow openings, said tangentially directed wall extension contributing to leading the contaminated air into said inlet slot.

4,397,227

COVERED TOASTER FOR ENERGY SAVING AND FASTER TOASTING

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Filed Jun. 25, 1981, Ser. No. 277,337

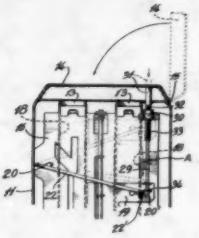
Int. Cl.³ A47J *37/08*

U.S. Cl, 99—334 **4 Claims**

1. In a toaster of the pop-up type, including a body, including a top and bread holding compartments upwardly opening through the top; and a pop-up device, mounted inside said body and operatively moveable up and down between an upper non-toasting position and a lower toasting position respectively and including a U-shaped rod having its bight pivoted in said body, a first leg attached to a spring which upwardly biases said first leg and a second leg having its end portion describing an arcuate path in a vertical plane between a lowered limit toasting position and an upper limit non-toasting position, said second leg being downwardly and upwardly inclined in a diretion away from said bight in the lowered and upper limit positions respectively of said second leg; in combination with:

(a) a cover, hinged to the top of said body and selectively pivotable between a covering position overlying said top and bread holding compartments and an uncovering position extending upwardly from said top;

(b) a cover lifting device, moveable up and down relative to the body operatively engageable with the hinged cover, and constructed and arranged to upwardly pivot the cover to the uncovering position and to allow lowering of the cover, said cover lifting device including a cover lifting rod slidable endwise up and down through the top of said body and including a lower end resting over said end portion of said second leg upon placing of the latter in



toasting position, said cover lifting rod upwardly projecting from the top adjacent to the hinge of the cover, said cover lifting rod propelled upwardly and pivoting said cover to uncovering position by said end portion of said second leg upon upward pivoting movement by said second leg from its lowered toasting position to its upper non-toasting position, said end portion of said second leg clearing said lower end of said cover lifting rod during its upward pivoting movement allowing down movement of said cover lifting rod which in turn permits pivoting of said cover to its covering position while said pop-up device remains in its non-toasting position, said end portion of said second leg sliding on, clearing and engaging under the lower end of the lowered cover lifting rod during its downward pivoting movement to toasting position.

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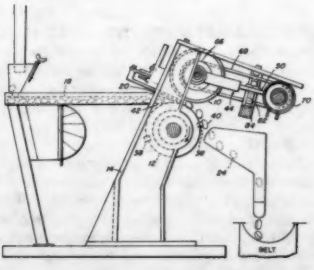
SELF-ADJUSTING APPARATUS FOR SLITTING PEANUTS

Robert L. Thornton, Moultrie, Ga., assignor to Seabrook Blanching Corporation, Albany, Ga.

Continuation of Ser. No. 159,293, Jun. 13, 1980, abandoned. This application Aug. 25, 1982, Ser. No. 411,235

Int. Cl.³ B02B *3/08*; A23N *5/01*

U.S. Cl. 99—541 **5 Claims**



1. Apparatus for slitting the skins of nuts, including

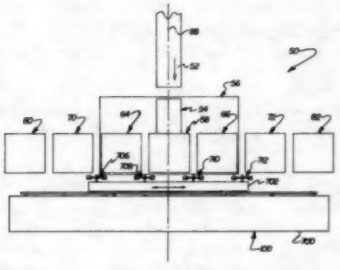
(a) a pair of rolls disposed in a vertical plane one above the other and defining a bite therebetween,
(b) feed means for delivering said nuts in a single steady stream into the bite of said rolls,
(c) slitting elements disposed on opposite sides of said bite in a plane generally perpendicular to the plane of said rolls for slitting the skins of nuts carried by said rolls between said elements,
(d) resilient mounting means supporting the upper of said rolls for free yielding movement in a vertical plane to and away from the lower of said rolls in response to each nut entering said bite whereby the gap between said rolls will vary automatically according to the size of each nut in the bite of said rolls, the lower of said rolls being rotatable about a fixed axis,
(e) power means drivingly connected to said rolls for rotating said rolls in opposite directions,
(f) said mounting means including a bracket, one end of said bracket rotatably supporting said upper roll and the opposite end of said bracket mounted to said apparatus for free pivotal movement within a predetermined angle about an axis in spaced parallel relation to the axis of said upper roll to thereby permit limited movement of said one end of said bracket together with said upper roll to and away from said lower roll.

4,397,229

STACKER-TYER

Richard J. Merwarth, Plattsburgh, N.Y., and Joseph P. McGinnis, Raubsville, Pa., assignors to Harris Corporation, Melbourne, Fla.

Filed Jul. 1, 1981, Ser. No. 279,671
Int. Cl.³ B65B *13/00*
U.S. Cl. 100—7 **15 Claims**



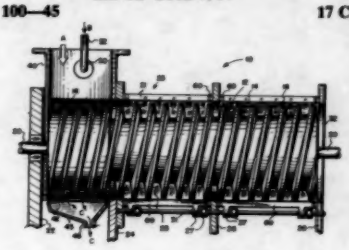
1. An apparatus for receiving a stream of sheet-like articles, forming the articles into stacks and tying the stacks, said apparatus comprising stacking means for receiving an incoming stream of sheet-like articles and for building a series of stacks of said articles from said stream, first and second tying mechanisms disposed on opposite sides of said stacking means, transfer means for moving each succeeding stack of said series of stacks laterally and alternately to one or the other of said tying mechanisms, skid plate means connected with said stacking means and said first and second tying mechanisms for supporting a first side surface of each of said stacks during lateral movement thereof, bottom support means connected with said stacking means and said first and second tyers for supporting the bottom of each of said stacks during lateral movement thereof, said transfer means including first pusher means for engaging a second side surface of each of said stacks and second pusher means for engaging a third surface of each of said stacks, drive means for moving said first and second pusher means together in a first direction to move a first one of said stacks away from said stacking means and toward said first tying mechanism and for moving said first and second pusher means together in a second direction to move a second one of said stacks away from said stacking means and toward said second tying mechanism, and control means for moving said first and second pusher means from an extended position in which said first and second pusher means engage said second and third side surfaces, respectively, of said each of said stacks to a retracted position in which said first and second pusher means are free of contact with said second and third side surfaces of said stacks.

4,397,230

SCREW PRESS IMPROVEMENTS

Arthur J. Hunt, and Arthur J. Hunt, Jr., both of 332 N. Halifax Dr., Ormond Beach, Fla. 32074

Filed Feb. 10, 1982, Ser. No. 347,439
Int. Cl.³ B30B *9/14*
U.S. Cl. 100—45 **17 Claims**



17. A predrainer type screw press having positive feed for materials having high liquid content comprising:
an input feed section;
a cylindrical output pressing section adjacent to said input feed section;
a rotatable compression screw having a frusto conical first body disposed concentrically within said pressing section with the small end of said body at the forward end thereof and the large end at the rearward end thereof and a screw thread continuously disposed helically around the surface of said first body, the outside diameter of said thread essentially equal to the inside diameter of said cylindrical pressing section;
a rotatable feed screw disposed within said feed section having a cylindrical second body concentric with and contiguous to said small end of said first body, said screw thread also continuously disposed helically around the surface of said second body, the diameter of said second body being greater than the diameter of said small end of said first body;
a replaceable filter screen disposed partially around said feed screw over the length of said second body, said screen having openings therein to permit free-run liquid to drain therethrough; and
an inlet hopper section communicating with said input feed section for introduction of said materials.

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APPARATUS FOR PRODUCING AND COLLECTING A LIQUID EXTRACT AND A DRY BY-PRODUCT FROM A MASH

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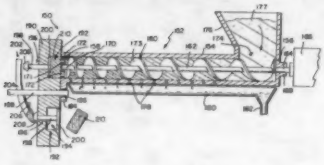
Division of Ser. No. 135,922, Mar. 31, 1980, Pat. No. 4,343,233.
This application Apr. 15, 1982, Ser. No. 368,719
Int. Cl.³ B30B *9/14*
U.S. Cl. 100—117 **5 Claims**

1. An apparatus for producing and collecting a liquid extract and a dry by-product from a mash of material, comprising: an extraction chamber having a closed end and an open end, the chamber including a material inlet opening located in proximity to the closed end for filling the chamber with the mash, a liquid outlet opening for collecting the liquid extract, a by-pro-

duct outlet opening at the open end for collecting the dry by-product, a screw conveyor axially positioned within the chamber to move the material from the filler opening to the open end, means for rotating the screw conveyor about its axis to compress the mash and extract the liquid therefrom, an index wheel, means for rotatably mounting the wheel to the chamber in proximity to the open end, the rotatable mounting means having an axis parallel to the axis of the rotation of the



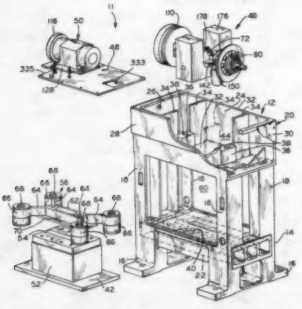
screw conveyor, means for incrementally rotating the index wheel, the index wheel including a plurality of work stations provided in proximity to the periphery thereof which are periodically presented at the open end in response to rotation of the wheel, the screw conveyor compressing the mash into each work station when presented at the open end to extract the liquid therefrom, and means for expelling the by-product from each work station of the wheel.

4,397,232

MECHANICAL PRESS HAVING A DROP IN DRIVE ASSEMBLY

Robert L. Schockman, St. Henry; Vernon E. Busse, Minster; Terry L. Wissman, New Bremen, and Daniel A. Schoch, Minster, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Sep. 8, 1981, Ser. No. 299,828
Int. Cl.³ B30B *15/04*
U.S. Cl. 100—214 **14 Claims**



1. A mechanical press comprising:

a rigid frame including a crown, a bed, and at least one upright interconnecting the crown and bed, and a slide mounted for rectilinear movement between the crown and bed,

said crown including a crank chamber therein defined by four sides, a bottom and a removable cover plate closing the top of the chamber, said chamber being open in the upward direction when the cover plate is removed,

said crown including at least two support members in said crank chamber,

a drive assembly comprising a crankshaft and at least one crank connection arm assembly connected to an eccentric on said crankshaft, and a pair of bearing block means within which said crankshaft is rotatably supported,

said drive assembly being insertable into and removable from said crank chamber through the open top of said chamber as an assembled unit,

said bearing block means being supported on said support members when fully inserted into the crank chamber,

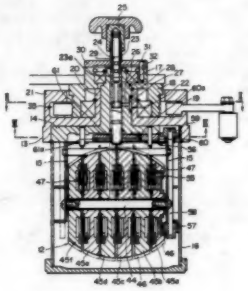
said connection arm assembly protruding through an opening in the bottom of the crown crank chamber and being connected to said slide.

4,397,233

AUTOMATIC NUMBERING ASSEMBLY

Koukichi Mori, Tokyo, Japan, assignor to Kabushiki Kaisha Morico, Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 243,807
Claims priority, application Japan, Mar. 17, 1980, 55-33661[U]; Mar. 17, 1980, 55-33662[U]
Int. Cl.³ B41F *17/26*
U.S. Cl. 101—35 **2 Claims**



1. An automatic numbering printer assembly for applying indicia to articles conveyed along a conveying path comprising:

a support arm;

a head suspension base carried by said support arm;

a printing drum supporting plate carried by and rotatable with respect to said head suspension base;

a printing drum carried by and rotatable with said supporting plate, said printing drum including a successively numbering digit wheel unit for applying indicia to an article moving past said printer assembly, said digit wheel unit having indicia applying means advanceable unit by one unit;

a mounting plate supported by said supporting plate, said mounting plate having an outer peripheral portion forming a friction-providing ring positionable so as to be engaged by articles moving along the conveying path so that said mounting plate is rotated one complete revolution by an article moving past said printer assembly;

locking means including a hydraulic lock for interconnecting said supporting plate and said mounting plate so that said supporting plate and said printing drum carried by said supporting plate are rotated one complete revolution when said mounting plate is rotated one complete revolution by an article moving past said printer assembly, rotation of said printing drum resulting in said digit wheel unit applying indicia to the moving article, said supporting plate being rotatable with respect to said mounting plate upon release of said locking means so as to permit angular adjustment of said supporting plate with respect to said mounting plate to thereby adjust the angular position of said printing drum;

a first gear rotatably mounted on said supporting plate for advancing said digit wheel unit by one unit during one complete revolution of said supporting plate;

a shaft rotatably supported by said supporting plate;

a second gear carried by and rotable with said shaft, said second gear meshing with said first gear so that rotation of said

shaft rotates said first gear thereby advancing said digit wheel unit; and

engagement means movable between first and second positions for selectively interconnecting said shaft for rotation with said supporting plate, said shaft when said engagement means is in the first position being rotated when the interconnected supporting plate and mounting plate are rotated by articles moving past said mounting plate, said shaft when said engagement means is in the second position being rotatable with respect to said supporting plate without movement of said supporting plate.

4,397,234

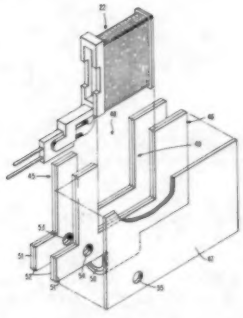
ELECTROMAGNETIC PRINT HAMMER COIL ASSEMBLY

Ho C. Lee, Endicott; David H. Rickenbach, Chenango Forks, both of N.Y.; Gerhard A. Wolfert, Stuttgart, Fed. Rep. of Germany, and Jack L. Zable, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,898

Int. Cl.³ B41J *9/38*

U.S. Cl. 101—93.29 **17 Claims**



1. A print hammer comprising a hammer element having a magnetic armature,

a magnetic core forming a magnetic circuit with said armature including a leg forming an operating air gap with said magnetic armature,

an operating winding assembly including an electrical energizable coil on said leg extending beyond the end of said leg and enclosing said operating air gap, and

a heat exchange system for said coil comprising

a heat sink member in a conductive heat transfer relationship with said magnetic core and the surrounding air mass,

internal heat conductive means thermally coupled in a conductive heat transfer relationship with the inner surface of said coil and said leg of said core,

external heat conductive means comprising

a moldable mass of heat conductive material enclosing said coil,

a magnetic shield structure comprising parallel magnetic plates,

said magnetic plates having attachment openings occupied by said moldable mass for bonding said magnetic plates to said coil so as to be thermally coupled in a conductive heat transfer relationship with the exterior surface of said coil,

said magnetic plates having portions extending beyond said winding and forming a shield against stray magnetic field flux in the vicinity of said operating winding,

said portions of said magnetic plates forming a radiating fin structure for radiating heat to a surrounding air mass.

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MULTI-PRINTING MODE ROTARY PRINTING MACHINE

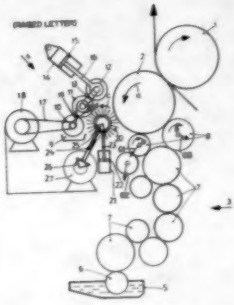
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to Man-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,065

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1981, 3116504

Int. Cl.³ B41F *7/26, 5/24, 35/00*

U.S. Cl. 101—141 **6 Claims**



1. Multi-mode rotary printing machine having

a printing cylinder system (1, 2) rotatable, selectively, in either direction of rotation including

a plate cylinder (2);

an impression cylinder (1);

an inking system (3) having at least one ink application roller (8);

a damping system (4) having a liquid transfer roller (11), a liquid application roller (12), and means (9, 10) applying liquid to the liquid transfer roller for transfer to the application roller and then to the plate cylinder,

means to selectively rotate the plate cylinder in either a first direction (a) or a second direction (e),

and comprising, in accordance with the invention

means for selectively operating the printing machine in one of the printing modes defined by:

(a) raised letter printing mode;

(b) flexo printing mode;

(c) direct lithographic printing mode, including

a roller brush (20);

the ink application roller (8) being adjustably positionable in ink transferring relationship with the plate cylinder, or out of said ink transferring relationship;

first positioning means (14–16) selectively controlling the position of the liquid application roller (12) for selective engagement or disengagement with the plate cylinder;

second positioning means (21, 22) selectively controlling the position of the roller brush (20) for surface contact or out of surface contact with the plate cylinder;

and wherein the liquid supply means of the damping system comprises

a liquid trough (9) and a pickup roller (10) at least partially dipping into the liquid trough and being positioned in liquid transfer relation to the liquid transfer roller (11);

and wherein (FIG. 1) for printing in the raised letter printing mode, the first positioning means are controlled for disengagement of the liquid application roller (12),

the second positioning means are controlled for engagement of the roller brush with the plate cylinder,

and the ink application roller (8) is positioned in ink transferring relation to the plate cylinder (2), the plate cylinder being rotated in the first direction (a)

for printing in flexo printing mode (FIG. 2),

the first positioning means (14–16) controls engagement of

the liquid application roller (12) on the surface of the plate cylinder (2),

the second positioning means (21, 22) controls engagement of the roller brush (20) with the plate cylinder,

the ink application roller (8) of the inker (3) being positioned out of ink transferring relationship with the plate cylinder, the plate cylinder being rotated in the second direction (e)

and wherein the liquid trough contains flexo printing ink; and

for direct lithographic printing (FIG. 3)

the first positioning means controls engagement of the liquid application roller (12) with the plate cylinder,

the second positioning means (21, 22) controls disengagement of the roller brush (20) from the plate cylinder,

the ink application roller (8) of the inker (3) being positioned in ink transferring relationship with the plate cylinder (2), the plate cylinder being rotated in the first direction (a)

and wherein the liquid trough contains offset damping liquid.

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INKING UNIT WITH TRAVERSING INK ROLLERS

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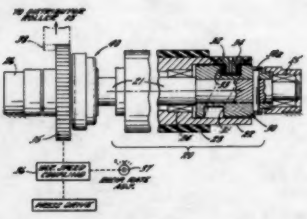
Filed Aug. 17, 1981, Ser. No. 293,445

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034644

Int. Cl.³ B41F *31/14;* **B41L** *27/16*

U.S. Cl. 101—350 **3 Claims**



1. In an inking unit for a printing press having a frame and a plate cylinder journaled therein as well as a press drive, the combination comprising a source of ink, a set of ink transfer rollers for establishing an ink film, a pair of distributor rollers for receiving the ink film from the transfer rollers, means for vibrating the distributor rollers endwise, a pair of form rollers interposed between each of the distributor rollers and the plate on the plate cylinder, the form rollers being rotated by surface engagement, the form roller which is in downstream position and at least one of the other form rollers having means for vibrating the same endwise so that the ghost image on such vibrated form rollers is constantly being displaced and dissipated both peripherally and axially with respect to the image on the plate, the vibrated ones of the form rollers being vibrated at a frequency which differs from the frequency of vibration of the associated distributor roller.

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ROLLER TRAIN STRUCTURE FOR USE WITH PRINTING MACHINE

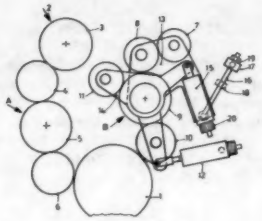
Manfred Makosch, Königsbrunn, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,608

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112745

Int. Cl.³ B41F *31/32*

U.S. Cl. 101—352 **5 Claims**



1. In combination with a printing machine having a plate cylinder (1),

an ink train system having

an ink distribution roller means (7, 8);

two application rollers (10, 11) positioned in circumferentially offset location about the circumference of the plate cylinder, whereby one roller (11) will be located behind the other roller and thereby form an inner roller (11) of the ink train system;

an ink transfer roller (9) in engagement with both said application rollers (10, 11), and further in engagement with the ink distribution roller means (7, 8);

and bearing means (21) locating the ink transfer roller in a fixed position on a frame of the machine,

comprising,

a first outer support plate (13) pivotally mounted to pivot about the axis of rotation of said bearing means (21), said first outer support plate securing thereon the ink distribution roller means (7, 8);

a second, inner support plate (14) pivotally mounted to pivot about the axis of rotation of said bearing means independently of pivoting movement of said outer support plate, said second, inner support plate securing thereon the inner roller (11);

first operating means (16–19) coupled to the first outer support plate (13) to effect and control pivoting movement thereof about the axis of rotation of the transfer roller (9);

and means to render the inner application roller (11) accessible from behind the outer application roller (10) including second operating means (15, 20) coupled to the second, inner support plate (14) and secured to the first outer support plate (13) to control relative positioning of the inner roller (11) with respect to the plate cylinder (1) while permitting rolling movement about the circumference of the transfer roller (9) upon pivoting or tipping the first, outer plate (13) about the axis of rotation of the transfer roller under command of said first operating means.

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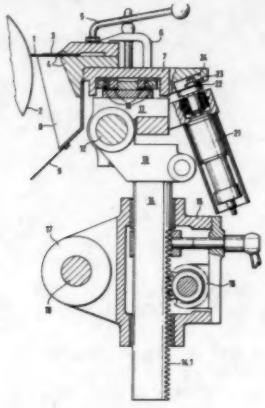
RECIPROCATING DOCTOR MECHANISM

Jürgen Westerkamp, Lengerich, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 311,941
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1980, 3039326
Int. Cl.³ B41F *31/02*; B21B *45/02*
U.S. Cl. 101—367 6 Claims



2. A doctor mechanism comprising:

a doctor for cooperating with a plate cylinder;

a mounting carrying said doctor;

a pivotally supported supporting member for supporting and for guiding movement of said mounting in a direction extending parallel to the axis of the plate cylinder; and

drive means for reciprocating the mounting with respect to said supporting member, said drive means comprising an electric motor secured on the supporting member and an eccentric drive driven by said motor.

4,397,239

DELAY FUNCTION MODULE FOR AMMUNITION

Victor H. Strobush, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

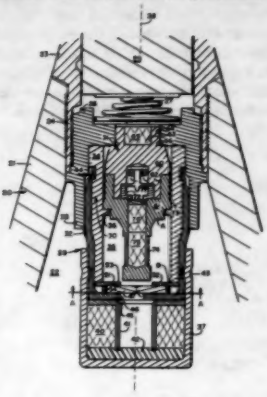
Filed Mar. 12, 1981, Ser. No. 243,177
Int. Cl.³ F42C *9/00*, *15/26*
U.S. Cl. 102—275 7 Claims

5. The method of introducing delay between the firing of the primary fuze of a projectile and the firing of the warhead of the projectile which comprises the steps of

(1) accelerating a plunger rearwardly within the projectile upon firing of the primary fuze,

(2) inertially delaying the acceleration of a firing pin within the plunger,

(3) decelerating the plunger after it has moved a predetermined distance with respect to the projectile, and



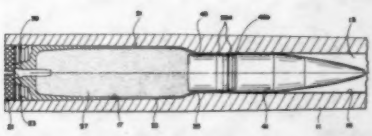
(4) causing the residual rearward momentum of the firing pin to initiate firing of the warhead.

4,397,240

ROCKET ASSISTED PROJECTILE AND CARTRIDGE WITH TIME DELAY IGNITION AND SEALING ARRANGEMENT

Mark M. Rottenberg, and William O. Davis, both of Baltimore County, Md., assignors to AAI Corporation, Cockeysville, Md.

Continuation of Ser. No. 857,956, Dec. 6, 1977, abandoned. This application Jul. 11, 1980, Ser. No. 168,948
Int. Cl.³ F42B *15/10*
U.S. Cl. 102—376 4 Claims



1. A rocket assisted projectile comprising

a thin-walled body shell,

longitudinally spaced forward and rear penetrator supports within said shell and having aligned coaxial bores formed therein and extending therethrough,

a central penetrator mass coaxially supported by and mutually rigidifying said thin-walled body shell by being longitudinally and laterally rigidly secured, both prior to and during projectile flight, in sealed relation within and extending through and axially beyond each of said support bores,

said rear support forming a nozzle block having a plurality of discharge nozzles formed therein,

said central penetrator mass, thin-walled shell and spaced supports forming a sealed chamber for containment of a rocket propellant therewithin,

and end-burning rocket propellant grain disposed within said chamber and having its effective burning end facing said nozzle block,

said nozzle block discharge nozzles being plugged in pressure-sealing relation with solid ignitable time delay plug igniters to thereby prevent initial entry of propellant gases at initial high propellant gas pressures into the rocket grain chamber, while enabling ultimate ignition of the rocket propellant by intermediate ignition of said solid

ignitable time delay plugs from propellant gases external of the projectile and in contact with said time delay plug igniters,

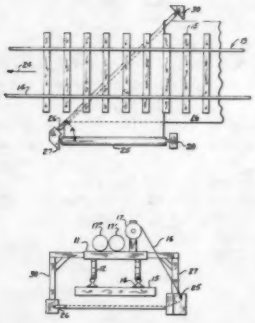
said central penetrator mass forming a multi-function element as a chamber-bounding element for the rocket propellant, a rigidifying element structurally cooperating with and enabling employment of a thin-walled body shell, and as a radial concentrator of mass for maximizing accuracy of flight and maximizing target penetration.

4,397,241

SYSTEM FOR LAYING A SEPARATION FABRIC ON THE SUBGRADE OF A RAILROAD BED

George R. Newman, 2421 Feather Run Trail, West Columbia, S.C. 29169

Filed Sep. 19, 1979, Ser. No. 77,103
Int. Cl.³ E01B *1/00, 37/00*
U.S. Cl. 104—2 **10 Claims**



8. A system for laying a separation fabric in continuous web form on the subgrade of a railroad bed, the fabric when laid extending transversely at least to the opposite ends of the ties, comprising, in combination: a structure mounted for movement on the railroad track in a working direction having means for supporting a supply roll of fabric above said railroad track and generally longitudinally thereof; a guide member supported on said structure longitudinally adjacent to and outside of said railroad track, in web receiving alignment with said means for supporting said supply roll; and a pay out member supported by said structure and extending transversely under said railroad track at least to the opposite ends of the ties in web receiving alignment with said guide member and at an oblique angle to said track to permit the web to be payed out underneath the track in longitudinal alignment therewith.

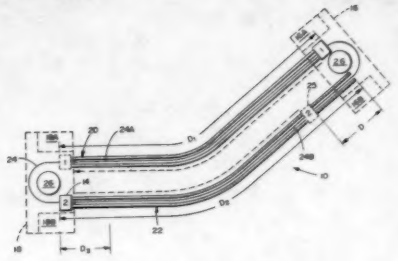
10. A method for laying a separation fabric in continuous web form on the subgrade of a railroad bed comprising the steps of locating a supply roll of fabric above and parallel with the railroad track; conveying the web from the supply roll, parallel with and outside of a railroad track to a position adjacent the bottom surface of the ties; directing the web around a guide so that the web leaves the guide surface perpendicular to the railroad track below the bottom surface of the ties; locating a pay out surface extending transversely under said track beyond the opposite ends of the ties at an angle of approximately 45° to the railroad track; and directing the web around said pay out surface, leaving said surface parallel to the railroad track and under the ties thereof.

4,397,242

CABLE DRIVEN SHUTTLE SYSTEM HAVING GUIDEWAYS OF DIFFERENT LENGTHS AND METHOD FOR ITS USE

Paul H. Wyss, Los Gatos, Calif., assignor to VSL Corporation, Los Gatos, Calif.

Filed Sep. 28, 1981, Ser. No. 305,945
Int. Cl.³ B61B *1/00*
U.S. Cl. 104—173 R **12 Claims**



1. A shuttle system using cable driven cars for transporting passengers between first and second spaced apart stations comprising:

(a) first and second laterally spaced apart car supporting guideways extending between said stations, said first guideway being shorter than said second guideway by a predetermined amount;

(b) first and second cable driven passenger cars including respective cabins for carrying passengers and respective means for supporting said cabins to said first and second guideways for movement along the latter between said stations; and

(c) a passenger car drive arrangement including

(i) cable means forming a looped path between said stations, said cable means always having a first section coextensive with said first guideway and a second section coextensive with said second guideway,

(ii) means supporting said cable means for limited back and forth movement along said looped path,

(iii) means for moving said cable means a predetermined distance back and forth along said path, and

(iv) means connecting said first and second passenger cars to said cable means such that said back and forth movement of the latter causes said first car to move along said first guideway between said first and second stations while, at the same time, said second car moves in the opposite direction along said second guideway between said second and first stations, even though said first guideway is shorter than said second guideway.

4,397,243

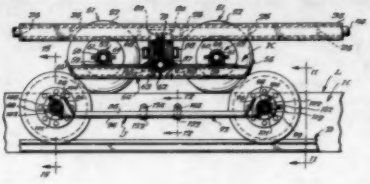
CONVERTIBLE HIGHWAY RAILROAD VEHICLE

Albert F. Hickman, Eden, N.Y., assignor to A. F. Hickman Associates, Inc., Trumansburg, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,503
Int. Cl.³ B60F *1/04*; B61F *13/00*
U.S. Cl. 105—159 **24 Claims**

18. A system for the combined transportation of a cargo by highway and railroad, comprising a container for carrying cargo, first axle means permanently connected to said container, rubber tired highway wheels supporting said first axle means, second axle means, railroad wheels supporting said second axle means, a first frame means on said first axle means, a second frame means on said second axle means, said first axle means having tandem axles and said second axle means having spaced front and rear axles parallel with and in farther spaced

relation than said tandem axles, said first frame means being of such size as to enter the space between said railroad wheels so



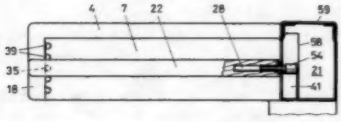
as to be capable of moving vertically into and out of supporting relation to said second frame means.

4,397,244

OFFICE FURNITURE

Wendolin Rutsche, Ruti, and Urs Langenegger, Hittnau, both of Switzerland, assignors to Embru-Werke, Mantel & CIE, Ruti, Switzerland

Filed Nov. 28, 1980, Ser. No. 211,032
Int. Cl.³ A47F 5/12
U.S. Cl. 108—6 **8 Claims**



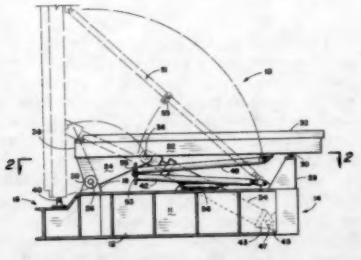
1. A furniture unit with an adjustable table top which is arranged between two lateral surfaces interconnected by an upper support, characterized by the fact that protruding pins (**35, 33**) are anchored in the posterior and lateral edges (**26**) of the table top (**22**), each of said pins being engaged in one of several superimposed recesses (**39, 40**) in the support (**21**) in a removable manner, and that a bolt (**28**) positioned for reciprocal movement and located in the rear edge of the table top is disposed in and with its head (**54**) protruding from a vertical slot (**38**) of the support (**21**), so that during disengagement of the top for its adjustment, it remains suspended over the bolts (**28**) in the support (**21**).

4,397,245

WORK PIECE HOLDER

Monard G. Washburn, Rte. 1, Box 163, Skiatook, Okla. 74070

Filed Dec. 8, 1980, Ser. No. 214,039
Int. Cl.³ A47F 5/12
U.S. Cl. 108—7 **3 Claims**



1. A tilting work table for supporting a work piece during a work operation and comprising:

a base means;

a bed plate having a working surface for receiving the work piece thereon, said bed plate being pivotally connected to said base frame;

means operably connected between said base means and said bed plate for moving said bed plate between horizontal and vertical positions;

manually operable folding leg means secured between the base means and bed plate for bracing of the bed plate in the tilted positions thereof to preclude accidental movement of the tilted bed plate toward a horizontal position upon failure of the bed plate moving means;

said folding leg means comprising at least two leg members having the adjacent ends thereof hingedly secured together and movable between alternate extended and collapsed positions; and

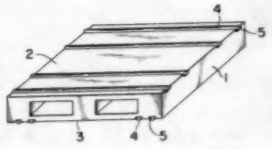
secondary cylinder means operably connected between the base means and leg means to initiate the collapsing of the leg means.

4,397,246

PALLETS MADE OF SYNTHETIC RESINS

Nobuhiro Ishida; Ikuo Sukekawa; Shigeo Yasuda, and Yoshikazu Yoshida, all of Yokohama, Japan, assignors to Kirin Beer Kabushiki Kaisha and Mitsubishi Kasei Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed May 2, 1977, Ser. No. 792,851
Int. Cl.³ B65D 19/18; B32B 3/30
U.S. Cl. 108—55.3 **16 Claims**



1. In a pallet made of a synthetic resin of the type comprising upper and lower deck boards, and a cord shaped slip preventing member made of relatively soft and flexible material and secured to at least one of the upper and lower deck boards of the pallet, at least one of said upper and lower deck boards being provided with a groove for receiving said slip preventing member, the improvement wherein said slip preventing member has a height larger than the depth of said groove so as to project beyond the deck board surface and the width of said groove is larger than that of said slip preventing member so that both sides of the slip preventing member are spaced from both side walls of said groove by a distance such that upon placing an object upon the pallet surface, the slip preventing member can deform in a direction parallel to the plane of the deck board surface to completely fill said groove so that the slip preventing member is able to compress in a direction transverse to the plane of the deck board surface sufficiently that the object may contact the pallet surface.

4,397,247

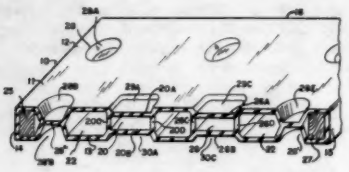
MOLDING SYSTEM AND ARTICLE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 109,188, Jan. 3, 1980, Pat. No. 4,285,903, which is a continuation-in-part of Ser. No. 828,747, Aug. 29, 1977, abandoned, and a continuation of Ser. No. 645,628, Dec. 31, 1975, abandoned, and a continuation-in-part of Ser. No. 300,248, Jan. 24, 1972, Pat. No. 3,875,275, and a continuation-in-part of Ser. No. 744,048, Jul. 11, 1968, abandoned. This application Aug. 25, 1981, Ser. No. 296,065

Int. Cl.³ B65D *19/24*

U.S. Cl. 108—57.1 10 Claims



1. A plastic pallet formed by molding comprising:

a slab-like rotationally molded plastic pallet structure formed into a rectangular parallelepiped self-supporting single-piece hollow body having planer major top and bottom wall portions and end wall portions,

a plurality of cavities defined by respective indented wall portions molded in said top and bottom wall portions,

at least certain of the cavities formed in the top wall portion of said hollow body being aligned with respective cavities formed in the bottom wall portion,

the aligned cavities having a common wall defining the bottom wall of each cavity such that the top and bottom walls of said enclosure are integrally joined together near the center of the pallet to provide mutual support and stiffness to said top and bottom wall portions,

there being at least two partitions extending parallel to each other between the top and bottom wall portions and joining said top and bottom wall portions of said pallet,

said partitions defining at least one passageway between opposite end walls of said pallet,

there being openings in the opposite end walls of said rectangular hollow body between said partitions for receiving blades of handling devices.

4,397,248

COAL BENEFICIATION/COMBUSTION SYSTEM

Arun K. Mehta, East Granby, and Richard W. Borio, Sommers, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 26, 1981, Ser. No. 266,770

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—263 4 Claims

1. A combustion system for mineralized coal, including,

a supply of mineralized coal,

a first furnace sized and arranged to burn pulverized coal which has been substantially cleaned of its mineral content,

a second furnace sized and arranged to burn coal with a relatively high mineral content on a fluidized bed,

means connected to the supply of mineralized coal arranged to crush and screen the coal into two separate portions having a substantial difference in their mineral content,

means connected to the crushing and screening means for supplying the portion of coal having the greater mineral content to the fluidized bed of the second furnace,

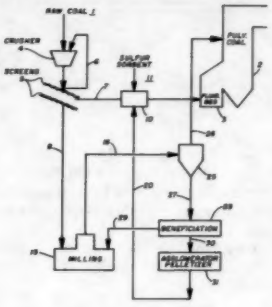
milling means connected to the crushing and screening means to receive the portion of coal having the lesser mineral content to reduce the size of the coal toward that size required for combustion in the first furnace,

a centrifugal type classifier connected to the mill to receive and further de-mineralize the milled coal,

a first output conduit from the classifier connected to the first furnace to supply the substantially de-mineralized coal to the first furnace,

a second output conduit from the classifier,

a beneficiation structure connected to the second output conduit of the classifier to receive the mineralized portion of the milled coal,



a first output conduit of the beneficiation structure connected to the first furnace to supply de-mineralized coal for combustion in the first furnace,

a second output conduit from the beneficiation structure,

and an agglomerator/pelletizing structure connected to the second output conduit of the beneficiation structure to receive and agglomerate/pelletize the mineralized coal and supply this coal to the second furnace for combustion.

4,397,249

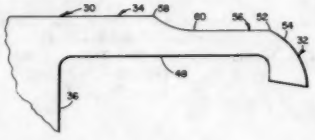
TUFTING MACHINE HOOK FOR FORMING LOW PILE FABRIC

Ian Slattery, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Apr. 1, 1982, Ser. No. 364,433

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 R 7 Claims



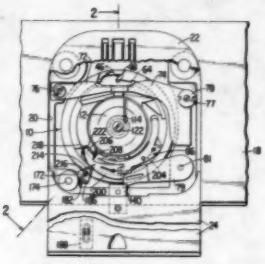
1. A cut pile hook for use in a tufting machine, said hook being planar and comprising a body member having a bill and a shank having a mounting portion, said bill extending from the shank to define a throat therebetween, a barb extending from said bill remote from said shank, said bill having a top edge and a bottom edge that extends from said throat to said barb, said barb having a top edge that slopes toward the top edge of said bill and a bottom edge spaced below the bottom edge of said bill to define a joining edge connecting the bottom edge of said barb and the bottom edge of said bill, the improvement wherein said top edge of said bill is dimensionally reduced relative to said bottom edge for a portion of the extent of the top edge of said bill, said reduced portion extending from adjacent the top edge of the barb to at least substantially intermediate said joining edge and said throat.

4,397,250

THREAD CONTROLLING ARRANGEMENT FOR BOBBIN WINDING MECHANISM

Thaddeus J. Zylbert, Morris Plains, and Herbert T. Hurler, Elizabeth, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Aug. 20, 1981, Ser. No. 294,854
Int. Cl.³ D05B 57/26, 59/00
U.S. Cl. 112—184 9 Claims



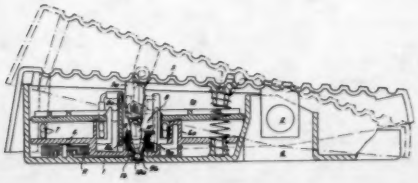
1. In a lockstitch sewing machine, a cupshaped circular moving looptaker including a peripheral rim formed with a thread seizing beak; a non-rotatable bobbin case supported in the looptaker; a rotatable bobbin within the bobbin case; an endwise reciprocable needle movable into a position for presenting a loop of needle thread to the looptaker for seizure; a thread tensioning device carried by the bobbin case and including a thread entering slot; a movable arm on the bobbin case; a spring which biases said arm into a position on the bobbin case preventing thread carried by the looptaker from entering the thread tensioning device by way of said slot; a finger with a camming portion, said finger being movable into engagement with said arm for lifting the arm from the position preventing thread from entering the tensioning device and for disposing the arm in a position wherein thread carried by the looptaker can pass under the arm to enter said slot of the tensioning device; thread pick up means on the bobbin; and means for rotating the bobbin to cause the bobbin to pick up and wind thread extending through the tensioning device onto the bobbin.

4,397,251

FOOT-OPERATED CONTROL DEVICE FOR ELECTRICALLY OPERATED APPLIANCES

Robert Leutwyler, Boppelsen, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina-Nähamaschinenfabrik, Steckborn, Switzerland

Filed Jun. 1, 1981, Ser. No. 268,845
Claims priority, application Switzerland, Jun. 2, 1980, 4251/80
Int. Cl.³ D05B 69/18
U.S. Cl. 112—277 7 Claims



1. A foot-operated control device for a sewing machine which comprises

a housing containing a receiving chamber,

a cable drum rotatably disposed within said receiving chamber about a fixed axis, said cable drum having a hub portion

a regulator member of a potentiometer fixedly installed on said hub portion, and

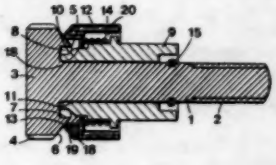
a treadle member pivotally supported by said housing, said treadle member carrying a slide member rotatably and operatively connected thereto, said slide member containing top contacts of said potentiometer and being vertically guided in said cable drum, said slide member being nonrotationally connected with the regulator member.

4,397,252

SEWING THREAD CUTTING DEVICE WITH THREAD RETENTION APPARATUS

Marcel Fresard, Geneva, and Jakob Jentschmann, Zurich, both of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Filed Mar. 16, 1981, Ser. No. 243,831
Claims priority, application Switzerland, Mar. 17, 1980, 2068/80; Apr. 8, 1980, 2697/80
Int. Cl.³ D05B 65/00
U.S. Cl. 112—299 13 Claims



1. A sewing thread cutting device with thread retention, comprising a rod, said rod comprising a body portion and a head portion, said head portion having a major surface facing said rod, a substantially circular stop member having a cutting edge provided on said major surface of said head portion, a first slider member mounted on said rod and a second slider member mounted on said first slider member, each said slider members having a bearing surface bearing against said head portion of the rod, said substantially circular stop member being disposed between said bearing surface of said first slider member and said bearing surface of said second slider member, said first slider member having an outwardly facing surface and said second slider member having an inwardly facing surface, said outwardly facing surface and said inwardly facing surface jointly defining a substantially annular housing, said substantially circular stop member projecting into said housing.

4,397,253

ROPE CLEAT TEETH STRUCTURE

Ronald L. Uecker, deceased, late of Wausau, Wis., by Mary J. H. Uecker, executrix, 918 Fulton, Wausau, Wis. 54401

Filed Aug. 25, 1980, Ser. No. 180,694
Int. Cl.³ B63B 21/08
U.S. Cl. 114—218 23 Claims

1. An improved cam cleat for receiving and gripping a rope under tension comprising in operative combination:

(a) a baseplate;

(b) at least one vertical pivot pin mounted on said baseplate;

(c) a cam block mounted on said pin and adapted to turn through an angular displacement thereof;

(d) a plurality of rope-engaging teeth formed on a side surface of said cam block;

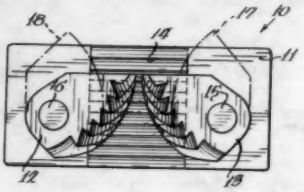
(i) an upper portion of said teeth being adapted to form a rope entry zone wherein said teeth are slanted forwardly from bottom to top with respect to said baseplate and to the source of tension in the rope;

(ii) a lower portion of said teeth being adapted to form a

locking zone wherein said teeth are slanted backwardly from bottom to top with respect to said baseplate and to the source of tension;

(iii) an intermediate portion of said teeth includes a curse transition zone between and joining said entry zone and said locking zone teeth; and

(iv) the ridge lines of said teeth are continuous throughout said three defined zones; and



(e) surface means spaced from said pin for forming a rope receiving and gripping nip between said cam block side surface teeth and said surface means; said combination providing ease of rope entry reduction in rope wear upon cleating and releasing said rope, and improved rope downward and gripping in said locking zone.

4,397,254

APPARATUS FOR MOVING A HELICOPTER ALONG A DECK

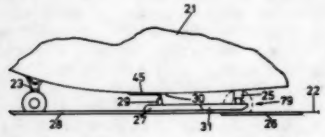
Martin A. Deady, Somerset, England, assignor to Westland Aircraft Limited, Somerset, England

Filed Jul. 15, 1980, Ser. No. 169,293

Claims priority, application United Kingdom, Jul. 25, 1979, 7925865

Int. Cl.³ B63B *35/50*

U.S. Cl. 114—261 **14 Claims**



1. Apparatus for moving a helicopter on the deck of a ship comprising a trackway on the deck and a movable trolley located on the trackway, wherein said trolley includes a vertically extendable and retractable probe having an upper end arranged for location in engagement means beneath the helicopter fuselage, said probe being power operated so as to selectively apply a downward force on the helicopter when said probe is located in said engagement means, probe mounting means carried by the trolley and laterally movable relative thereto so that said extended probe is easily locatable in the engagement means, and locking means operative to lock said mounting means and thereby the probe in a central position on the trolley after said probe is located in the engagement means.

4,397,255

ANCHOR HOLDING CAPACITY AUGMENTATION SYSTEM

Robert J. Taylor, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 15, 1981, Ser. No. 273,825

Int. Cl.³ B63B *21/24*

U.S. Cl. 114—294 **11 Claims**

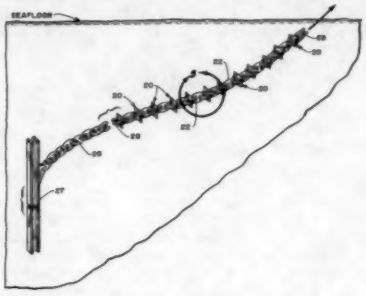
1. An anchor holding capacity augmentation system for enhancing the overall mooring capability of an embedded anchor in soft seafloors, comprising:

a. a mooring line connected between the anchor and an object to be moored;

b. a segment of said mooring line comprising a chain;

c. a plurality of spaced in-line plate means attached along said chain segment of said mooring line for a predetermined distance from a point on said mooring line segment above the seafloor toward the object to be moored when said mooring line is in a substantially vertical position above the anchor;

d. means for securely fastening each said plate means onto individual chain links of said segment of mooring line;



e. said plate means each having a determined planar area for providing a given amount of holding capacity under unidirectional mooring loads along said mooring line when embedded into the seafloor;

f. means associated with each said plate means for maintaining the plate means in a position such that the planar area thereof is maintained substantially normal to the line of action of said mooring line;

g. each said plate means penetrating and being embedded edgewise into the seafloor as said mooring line swings from said substantially vertical position to an inclined position with the seafloor as a mooring load is applied.

4,397,256

ANCHORS

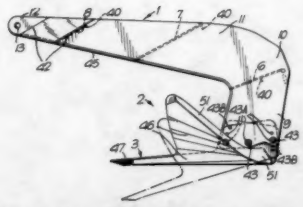
Peter Bruce, 12 Hollydene Ave., Onchan, Douglas, Isle of Man, England

Continuation of Ser. No. 155,201, May 30, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,165

Claims priority, application United Kingdom, Jun. 1, 1979, 7919169

Int. Cl.³ B63B *21/32*

U.S. Cl. 114—303 **14 Claims**



1. An anchor including a fluke and a shank of cranked form having a longer leg adapted at one end to be attached to an anchor line and a shorter leg adapted at one end to be attached to a fluke, the shank comprising at least two transversely spaced elongate plate members including leading and trailing

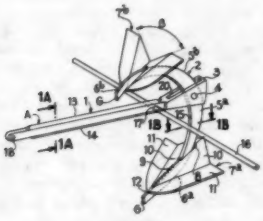
edges and connected by at least one transverse plate member located between said shank ends and having at least a portion included to present a positive angle of attack to the sea bed soil, a plurality of open-ended passages being provided between the elongate plate members and serving to permit substantially unobstructed foil flow through the shank, one of said open-ended passages being located adjacent the fluke and in the shorter leg of the shank to permit escape of a rearward flow of soil between the parts of the trailing edges of said elongate plate members in the shorter leg.

4,397,257

SEA ANCHOR IN PARTICULAR FOR LARGE SHIPS

Armand Colin, Versailles, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Paris, France

Filed Aug. 7, 1980, Ser. No. 176,246
Claims priority, application France, Aug. 7, 1979, 79 20214
Int. Cl.³ B63B *21/44*
U.S. Cl. 114—304 **8 Claims**



1. A sea anchor comprising a coupling device which has at least one shank and at least one rocker which is mounted in the vicinity of a first end of the coupling device to pivot about an axis perpendicular to a longitudinal plane of symmetry of the anchor and which has two branches constituting arms of the anchor which extend on opposite sides of the coupling device from the pivot axis to free ends of the arms, a ploughshare carried by each arm adjacent the free end of the arm, the ploughshare having a convex side and an opposed concave side in cross-sectional planes perpendicular to said longitudinal plane of symmetry and a convergent substantially pointed end portion which substantially faces a second end of the coupling device opposed to said first end, said convex sides of the two ploughshares being disposed in confronting relation to each other, said ploughshares forming dihedral structures, each having a profile in the shape of a pyramid, said ploughshares having two flanges which extend outwardly relative to lateral portions of the dihedral structures in a common plane perpendicular to a bisecting plane of the dihedral structures.

4,397,258

MACHINE FOR ONE-SIDED COATING OF THIN SHEETS

Bernhard Dremel, Appenzell, Switzerland, assignor to Ulrich Steinemann AG, Maschinenfabrik, St. Gallen, Switzerland

Filed Dec. 3, 1981, Ser. No. 327,095
Claims priority, application Switzerland, Dec. 11, 1980, 9153/80
Int. Cl.³ B05C *1/02, 13/00*
U.S. Cl. 118—50 **11 Claims**

1. A machine for coating of one side of a sheet not subject to the so-called ear effect, comprising:

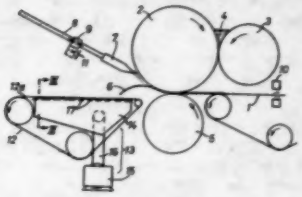
a roller for applying a coating to the sheets;

a conveyor belt having openings formed therethrough and therealong, and positioned adjacent the roller to directly receive a coated sheet;

means for detaching the coated sheets from the roller, said detaching means including co-operative first and second means;

said first means is positioned adjacent said roller for providing an air jet directed to one side of the coated sheets;

said second means is coupled to said conveyor belt positioned adjacent said roller for providing a drawing action through said openings directed to the other side of the coated sheets;



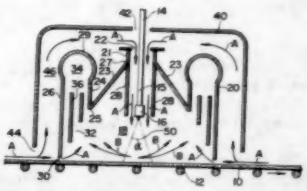
the force of said air jet directed to the one side of said coated sheet cooperates with the force of said drawing action directed to the other side of the coated sheets to effect the detachment of the coated sheets from said roller, and onto said conveyor belt whereby; the so-called ear-effect is substantially eliminated.

4,397,259

SPRAYING APPARATUS FOR COATING GLASS SHEET WITH METAL OXIDE

Yoshihumi Kanda; Isamu Morita, both of Ichishi; Takayoshi Kandachi, Matsusaka, and Kazuyuki Kirin, Ichishi, all of Japan, assignors to Central Glass Company Limited, Ube, Japan

Filed May 13, 1982, Ser. No. 377,955
Claims priority, application Japan, May 14, 1981, 56-72425
Int. Cl.³ B05B *3/18, 13/02*
U.S. Cl. 118—323 **4 Claims**



1. An apparatus for coating a hot and horizontally travelling glass sheet with a metal oxide film, the apparatus comprising:

a spray means for spraying a solution of at least one organometallic compound which can be thermally decomposed to an intended metal oxide downwardly against the upper surface of the glass sheet, the spray means having a spray nozzle which is held at a predetermined vertical distance above the glass sheet and reciprocatingly movable over and transversely of the glass sheet;

an outer enclosure held above the glass sheet so as to leave a gap between the glass sheet and the lower end of the outer enclosure; and

an inner hood which is entirely enclosed in said outer enclosure so as to leave a space which serves as a gas passage therebetween and comprises a middle portion receiving therein said spray nozzle and defining therein a spraying zone and two end portions which are adjacent said middle portion and located upstream and downstream of said middle portion, respectively, said middle portion being constructed in a generally symmetrical shape with respect to a vertical plane containing the path of the transverse movement of said spray nozzle and comprising a central top portion formed with an opening to allow said spray means to move therethrough and to admit an ambient gas flowed into said gas passage into said spraying zone there-

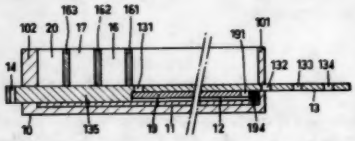
through and two vertical guide plates which are arranged symmetrically with respect to said vertical plane and extend downward from said central top portion such that the lower edge of each of the two guide plates is at nearly the same level above the glass sheet as said spray nozzle, each of said two end portions being so shaped as to provide an exhaust passage which is contiguous to said spraying zone at an inlet opening having a lower boundary at a level sightly above the glass sheet and an upper boundary at nearly the same level as said spray nozzle.

4,397,260

BOAT FOR THE EPITAXIAL GROWTH OF SEVERAL LAYERS FROM THE LIQUID PHASE

Marc Mahieu, Caen; Jacques Varon, Troarn, and Philippe Vandenberg, Caen, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,671
Claims priority, application France, Apr. 23, 1980, 80 09072
Int. Cl.³ H01L *21/208*
U.S. Cl. 118—421 8 Claims



1. A boat for epitaxial growth from the liquid phase of successive semiconductor layers on at least one semiconductor substrate, said boat comprising

a fixed base plate having a recessed surface for supporting at least one substrate,

a flat slide provided above said fixed base plate, said slide being movable through a wall of the boat over said base plate,

at least one reservoir containing liquid solution for epitaxial growth and being fixed at one end of said boat, said slide supporting said liquid solution in said reservoir, and

a fixed flat plate placed between said base plate and said slide, said flat plate having at least one window through its surface,

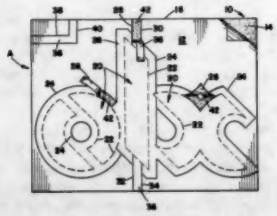
said slide having a plurality of communication windows through its surface for respectively admitting said liquid solution to said substrate and discharging said liquid solution from said substrate.

4,397,261

PAINT MASK

Wallace R. Jones, Waite Hill Village, Ohio, assignor to The Excello Speciality Company, Cleveland, Ohio

Filed Oct. 30, 1981, Ser. No. 316,925
Int. Cl.³ B05C *21/00*
U.S. Cl. 118—505 16 Claims



1. A mask adapted for securing to a work surface for placing a predetermined design configuration thereon, said mask comprising:

a first mask layer having a contact type of adhesive on one surface thereof and a second liner layer removably affixed to said first layer one surface for defining a laminated-type mask structure; discontinuous cuts extending through both of said first and second layers for defining some predetermined design configuration therein while retaining said layers in an interconnected relationship; score cuts extending through said second layer adjacent to and generally coextensive with said discontinuous cuts for defining first band-like areas therebetween in said second layer, whereby removal of said first band-like areas exposes corresponding bands of adhesive on said first layer adapted to facilitate adhesively securing said mask structure to a work surface with said design configuration disposed in a desired orientation thereon, those portions of said mask first and second layers on the other side of said discontinuous cuts from said score cuts being thereafter removable from said mask structure for accurately masking a work surface with said design configuration.

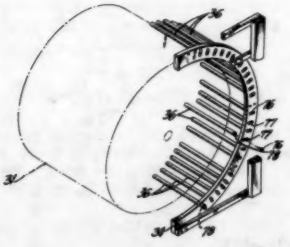
9. In a paint mask comprised of a first mask layer having a contact type of adhesive coating on one surface only and no adhesive whatsoever on the opposite surface thereof and a second liner layer of a type readily releasable from said adhesive coating and being releasably secured to said first layer by said adhesive coating and wherein said mask further includes a predetermined design configuration in said first and second layers with said design configuration and the remainder of said mask being selectively severable from each other, a plurality of band-like areas in said second layer defined by cuts through said second layer only and being selectively removable from said second layer and from said adhesive for exposing corresponding bands of adhesive on said first layer, said adhesive bands adapted to permit said mask to be adhesively secured to a work surface with the liner layer side of said adhesive coating in the areas of said adhesive bands engaging the work surface.

4,397,262

APPARATUS FOR APPLYING AND DRYING SEALING MATERIAL TO THE SEAL FLAP OF ENVELOPES

Harold R. Lillibridge, Burlingame, and John Sullivan, San Jose, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 194,030, Oct. 6, 1980, abandoned. This application Mar. 4, 1982, Ser. No. 354,669
Int. Cl.³ B05C *21/00*
U.S. Cl. 118—620 9 Claims



1. An apparatus for drying the adhesive portions on envelopes produced by an envelope producing machine, said apparatus comprising:

a radio frequency generator and connected thereto a radio frequency electrode;

a rotatable drum which is an electrical ground with respect to said electrode and spaced therefrom; and

means to collect and convey the envelopes having undried adhesive portions to said drum so that said portions are

dried by radio frequency power as they are conveyed by the drum beneath said electrode;

said electrode comprising a plurality of conductive electrode rods, each rod attached at only one end thereof to a base which extends in an arc along one side of said drum, each of said rods being a straight elongated rod arranged parallel to the other rods;

each of said electrode rods having an end portion extending through an elongated slot in said base and being fixedly attached to said base by securement means received on said end portion along the axis of said rod,

each of said elongated slots in said base extending along a radius of said drum, and

each of said electrode rods extending inwardly over, around, and partially across said drum to form an arc proximate and spaced from the surface of said drum;

whereby each electrode rod is attached to said base by adjustment means including said end portion and securement means whereupon by loosening of said securement means, said rod may be adjusted prior to use to permit movement of each rod individually either toward or away from the surface of said drum.

5. An apparatus for drying the adhesive portions on envelopes as in claim 1, wherein the adhesive portions are latex strips and the apparatus further comprises means for applying said latex gum strips.

6. An apparatus for drying the adhesive portions on envelopes as in claim 5 wherein said latex strip applying means is an air bar gummer.

4,397,263

DEVICE FOR EFFECTING PROTECTIVE TREATMENTS ON MANUFACTURE IN CONCRETE IN OPERATION AS WELL AS IN PREFABRICATION

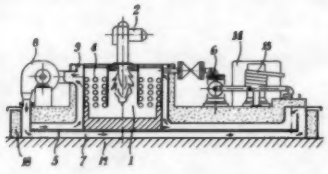
Arturo Rio; Gennaro Guala, and Stefano Biagini, all of Colleferro, Italy, assignors to Italcementi-Fabriche Riunite Cemento S.p.A., Bergamo, Italy

Filed Jun. 5, 1981, Ser. No. 270,890

Claims priority, application Italy, Oct. 14, 1980, 49897 A/80

Int. Cl.³ B05C *5/00*

U.S. Cl. 118—643 **3 Claims**



1. A device for protecting and rendering impermeable a concrete manufacture on use, comprising

(a) heating means for dehydrating a surface layer of said manufacture whereby pores are formed therein, said heating means comprising a radiant plate arranged at a space from said concrete manufacture, a combustion chamber, a spiral tube coil containing diathermic oil arranged within said combustion chamber above said radiant plate, a circulating pump for circulating said diathermic oil within said spiral tube coil, a burner means for selectively heating to a desired temperature said spiral tube coil and thereby said radiant plate and a blower means for circulating a flow of hot air within said space between said radiant plate and said concrete manufacture;

(b) means for impregnating said surface layer with a liquid monomer whereby said monomer penetrates said pores;

(c) means for supplying water to said surface layer impregnated with said liquid monomer for polymerizing said monomer under said water which is heated by said heating means to a temperature range of substantially 80° C. to 90° C.; and

(d) a peripheral frame means abutting said concrete manufacture and isolating said space from the ambient atmosphere.

4,397,264

ELECTROSTATIC IMAGE DEVELOPMENT SYSTEM HAVING TENSIONED FLEXIBLE RECORDING MEMBER

Gilbert J. Hatch, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 17, 1980, Ser. No. 169,543

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—656 **8 Claims**

1. An apparatus for developing a latent image recorded on a flexible member with an insulating developer material, including:

means, positioned closely adjacent to the flexible member defining a development zone therebetween, for transporting the developer material into contact with the flexible member in the development zone so as to develop the latent image recorded thereon;

means for maintaining the flexible member at a preselected tension of sufficient magnitude so that the developer material being transported into contact therewith spaces the flexible member from said transporting means; and

means for adjusting the thickness of the developer material being transported into the development zone to control the spacing between the flexible member and said transporting means so as to optimize development of solid areas and lines in the latent image.

6. A method of developing a latent image recorded on a flexible member, including the steps of:

transporting an insulating developer material into contact with the flexible member in a development zone so as to develop the latent image recorded thereon;

maintaining the flexible member at a pre-selected tension of sufficient magnitude so that the developer material being transported into contact therewith spaces the flexible member from the developer material transport; and

adjusting the thickness of the developer material being transported into the development zone to control the spacing between the flexible member and the development material transport so as to optimize development of solid areas and lines in the latent image.

4,397,265

PARTICLE LEVEL SENSING APPARATUS

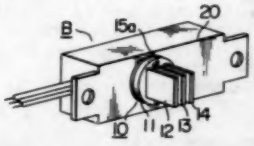
Isamu Terashima, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,632

Claims priority, application Japan, Sep. 8, 1980, 55-123595

Int. Cl.³ G03G *15/08*

U.S. Cl. 118—694 **13 Claims**



1. A particle level sensing apparatus comprising:

a container containing particles therein;

at least two electrode means disposed at a predetermined position in said container for providing a capacitance therebetween;

means for sensing a level of the particle by detecting a

change in said capacitance which occurs depending on whether or not the particles are present between said electrode means; and

means for imparting vibration to at least one of said two electrode means with a frequency of vibration selected to lie within the range of 200 Hz to 2000 Hz.

4,397,266

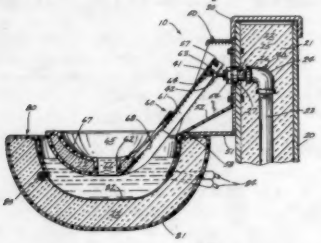
FREEZE PROTECTED LIVESTOCK WATERING DEVICE

Wayne B. Noland, 340 Crescent Dr., and Larry F. Noland, 5645 SE. Maple Dr., both of Carlisle, Iowa 50047

Continuation of Ser. No. 82,146, Oct. 5, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 232,302

Int. Cl.³ A01K *7/06*

U.S. Cl. 119—73 **15 Claims**



1. An animal watering device having an exterior housing, a water supply pipe disposed in said housing, insulation disposed within said housing about said pipe, and a valve assembly disposed in the outlet portion of said water supply pipe and operatively engageable by an actuator means to supply water to a drinking receptacle disposed beneath said valve assembly, the improvement comprising:

an insulated apertured bowl shaped float member supported on a free end of said actuator means and substantially overlying said insulated drinking receptacle, wherein said bowl shaped float member floats upon water contained in said drinking receptacle, and said bowl shaped float member is adapted to be moved by direct contact from an animal to introduce water into the interior of said float member, wherein the water may be consumed by said animal from the interior of said insulated apertured bowl shaped float member and

said drinking receptacle is further provided with heating means comprising an electrical heating wire surrounded by electrical insulation material, and said drinking receptacle includes an inner metallic bowl to heat said metallic bowl, said metallic bowl transferring heat to water contained within said bowl.

4,397,267

TECHNIQUE AND APPARATUS FOR SOLIDS CIRCULATION CONTROL IN THE SOLIDS CIRCULATING BOILER

Carl E. Fink, McMurray, Pa., assignor to Conoco Inc., Stamford, Conn.

Filed Aug. 3, 1981, Ser. No. 289,542

Int. Cl.³ F22B *1/02*

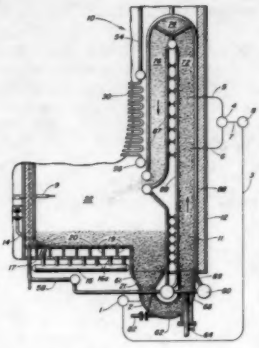
U.S. Cl. 122—4 D **5 Claims**

1. In a fluidized bed heat exchanger wherein particulate solids are circulated from a fluidized-bed combustion zone by way of a flow-control zone upwardly through an elongated vertically disposed heat exchange zone and thence back to said combustion zone, the method of controlling the rate of circulation of said particulate solids which comprises:

measuring the pressure differential between two points along said heat exchange zone,

comparing the measured value of said differential to a predetermined reference value,

generating a control signal responsive to said comparing, and



utilizing said control signal to permit increased flow of said particulate solids through said flow control zone responsive to a decrease in said pressure differential and a decreased flow of said solids responsive to an increase in said differential.

4,397,268

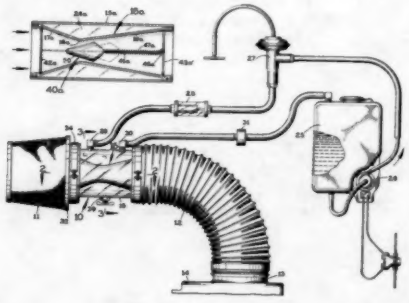
ENGINE INTAKE AIR MOISTURIZER

Charles L. Brown, 8801 SW. 116th St., Miami, Fla. 33176

Filed Sep. 24, 1981, Ser. No. 305,083

Int. Cl.³ F02D *19/00*; F02M *25/04*

U.S. Cl. 123—25 L **8 Claims**



1. In a moisturizer for any combustion process, said moisturizer having:

an open-ended housing for connection at one open end to the air intake of the carburetor, said housing having an air inlet opening at its opposite end;

an open-ended annular body inside said housing defining a venturi passageway between its ends for conducting air from said air inlet opening of the housing to said air intake of the carburetor, said body having a reduced diameter throat at which air pressure in said body is at a minimum, and having tapered portions at both axial sides of said throat tapering outwardly therefrom, said body for at least a portion of its extent being spaced from said housing to define therewith a liquid chamber at the outside of said body, said body at said latter portion of its extent being porous to pass moisture from said liquid chamber for evaporation into the air flowing through said venturi

passageway, said venturi passageway providing increased migration of moisture through said body at said throat due to the reduction of air pressure at said throat;

and means on said housing for introducing liquid into said chamber;

the improvement which comprises valve means in said venturi passageway for varying the effective open area of said passageway around said valve means in accordance with the volumetric flow rate of air through said venturi passageway.

4,397,269

INTERNAL COMBUSTION ENGINE WITH A CIRCULATING COOLING MEDIUM

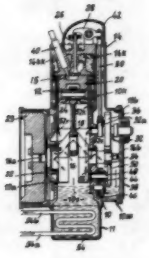
Ernst Hatz, Ruhstorf, Fed. Rep. of Germany, assignor to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 293,905

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115314

Int. Cl.³ F01P *11/08*

U.S. Cl. 123—41.33 **8 Claims**



1. An apparatus for removing heat from an internal combustion engine, comprising means defining a reservoir in said engine for holding oil for cooling said engine, means in said engine for circulating said cooling oil from said reservoir through said engine to absorb heat therefrom during operation thereof and for returning the heated cooling oil to said reservoir, heat exchanger means disposed in said reservoir and having a cooling fluid flowing therethrough, said heat exchanger means transferring heat from said cooling oil in said reservoir to said cooling fluid, and a heating system which is in fluid communication with said heat exchanger means and has said cooling fluid flowing therethrough, said engine having an exhaust pipe which passes through said oil reservoir, whereby heat from exhaust gases passing through the portion of said exhaust pipe in said reservoir is transferred to said cooling oil in said reservoir.

4,397,270

VALVE OPERATING MECHANISM FOR INTERNAL COMBUSTION ENGINES

Shunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 8, 1980, Ser. No. 138,792

Claims priority, application Japan, Apr. 13, 1979, 54-45195

Int. Cl.³ F01L *1/18*

U.S. Cl. 123—90.16 **2 Claims**

1. A valve operating mechanism for the valves of an internal combustion engine comprising:

(a) a first cam rotatable about an axis in timed relation to the engine speed;

(b) a second cam rockable about an axis and operatively engaged with a valve of the engine;

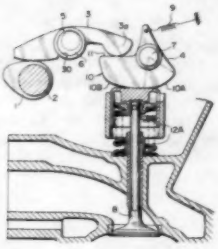
(c) a rocker arm rockable about an axis and interposed between said first and second cams to provide an operative connection therebetween;

(d) control means for sensing variations of engine operating condition; and

(e) means responsive to said control means for shifting the axis of rocking movement of said rocker arm relative to the axes of said first and second cams thereby varying the angular position of said second cam relative to the angular position of said first cam;

(f) said shifting means including a rocker arm internal cylindrical sleeve, a rocker shaft extending through said sleeve, and an eccentric bearing secured to said rocker shaft and mounted for rocking motion within said rocker arm sleeve, said eccentric bearing having an axis spaced from and parallel to the axis of said rocker shaft causing the axis of rocking motion of said rocker arm to be non-coaxial with the axis of rocking motion of said rocker shaft;

(g) said control means including a cylinder, a piston slidable in said cylinder, said piston forming and separating a high oil pressure chamber at one end of said cylinder and a low



oil pressure chamber at the other end of said cylinder, said high oil pressure chamber being fluidly connected to the engine oil pump, said low oil pressure chamber being fluidly connected to the engine oil pan, said piston being normally urged by high oil pressure towards said low oil pressure chamber, said piston having an oil passage formed therein providing communication between said high and low oil pressure chambers, a valve disposed in said oil passage and movable towards said high oil pressure chamber to open said passage, and movable towards said low oil pressure chamber to close said passage, said valve being movably actuated by said control means in response to sensed varying engine operating conditions, a spring disposed in said low oil pressure chamber, said spring urging said piston towards said high oil pressure chamber to permit said valve to close said oil passage, and connecting means linking said piston and said rocker shaft for rotating said rocker shaft in response to movement of said piston.

4,397,271

SEMI-SELF-CONTAINED HYDRAULIC LASH ADJUSTER

William J. Gardner, Wheaton, Ill., assignor to Stanadyne, Inc., Windsor, Conn.

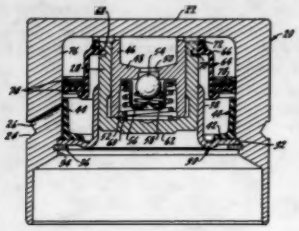
Filed Mar. 2, 1981, Ser. No. 239,334

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—90.55 **6 Claims**

1. A semi-self-contained lash adjuster including a generally cylindrical cup-shaped follower defining a chamber, a body positioned axially in said chamber and a spacer supporting said body, a plunger reciprocally movable within said body and a high pressure chamber defined between said plunger and body, a check valve in said plunger controlling fluid access into said high pressure chamber, the improvement comprising a diaphragm-type seal peripherally attached to and movable with

said body and in sealing sliding engagement with an internal surface of said follower, said seal defining a reservoir in com-



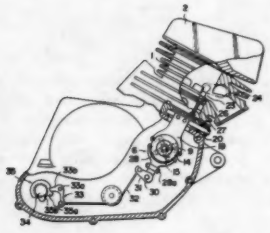
munication with said high pressure chamber through said check valve.

4,397,272

TWO STROKE ENGINE HAVING EXHAUST TIMING CONTROL VALVE MEANS

Shigenori Omote, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 26, 1981, Ser. No. 314,970
Claims priority, application Japan, Oct. 30, 1980, 55-151449
Int. Cl.³ F02N *17/00*; F02B *75/02*; F02D *9/06*
U.S. Cl. 123—179 A 4 Claims



1. A two-stroke engine comprising cylinder means, piston means which is received in said cylinder means for reciprocating movement, said cylinder means having exhaust port means adapted to be closed by said piston means, exhaust port timing control rotary valve means provided in said exhaust port means at upper portion thereof, said valve means being movable between a projected position wherein it is projected into the exhaust port means to thereby cover the upper portion of the exhaust port means and a retracted position wherein it is retracted from the exhaust port means, valve actuating means for actuating the valve means between said projected and retracted positions in accordance with engine speed, engine starting means for cranking said engine for starting the same, said valve means being connected with said engine starting means so that the valve means is actuated during engine starting operation to thereby eliminate valve seizure.

4,397,273

RETRACTABLE ENGINE IGNITER

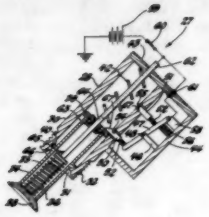
Charles H. Folkerts, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 20, 1981, Ser. No. 255,802
Int. Cl.³ F02P *19/02*
U.S. Cl. 123—145 A 7 Claims

1. A power-positioned igniter for use in a compression ignition internal combustion engine having a wall defining a combustion chamber, said igniter comprising,

a housing having an open end adapted to form a portion of said combustion chamber wall,

a glow plug carried in said housing and reciprocably movable between extended and retracted positions, said glow plug protruding through said open end into the combustion chamber when in the extended position and being operable therein to heat combustible mixtures in the chamber to aid their ignition, said glow plug being withdrawn through the wall of said chamber into said housing when in said retracted position to reduce gas flow disturbances in the chamber during periods of operation when supplemental aid to ignition is not required, and



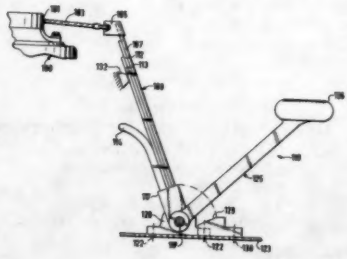
powered means selectively operative to position said glow plug in either of its extended or retracted positions upon the occurrence of predetermined events, said powered means including resilient means continuously biasing said glow plug toward its extended position and force applying means using energy from intermittent combustion chamber pressures acting in a retracting direction on the glow plug during engine operation and operative in response to a predetermined condition to move said glow plug into its retracted position against the bias of said resilient means.

4,397,274

LAWN MOWER HAVING INTERNAL COMBUSTION ENGINE AND A STARTING DEVICE

Franz Tarnedde, Braunschweiger Strasse 1, D 3353 Bad Gandersheim, Fed. Rep. of Germany

Continuation of Ser. No. 874,647, Feb. 2, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,365
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705066; Nov. 8, 1977, 2749813
Int. Cl.³ F02N *1/00*
U.S. Cl. 123—185 BB 1 Claim



1. In a lawn mower including drive means having an internal combustion engine and a starter attachment for said engine, a combination comprising a swivel axis; an angular lever pivotably supported on said axis, one arm of said angular lever forming a foot-operated arm and the other arm forming a pull arm; a starter cord spring-biased into a rest position and retractable from said starter attachment by means of said pull arm; leaf spring means forming at least a portion of one of said arms of

said angular lever and being adjusted to bias said starter cord in a starting direction upon actuation of said lever and upon overcoming the starting resistance of the engine to impart an additional impulse to said starter attachment; and wherein said one arm including said leaf spring means comprises an abutment member having an outwardly directed bent portion for limiting the deformation of said leaf spring means.

4,397,275

IDLING SPEED CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

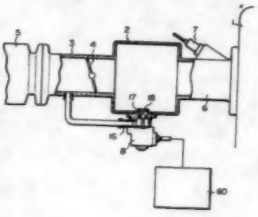
Hiroshi Itoh, Nagoya; Haruo Watanabe, Okazaki, and Mamoru Kobashi, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

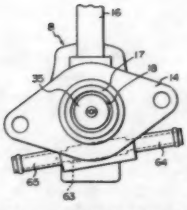
Filed Mar. 2, 1981, Ser. No. 239,641

Claims priority, application Japan, Sep. 17, 1980, 55-131118[U]

Int. Cl.³ F02M 3/00

U.S. Cl. 123—339 10 Claims





1. An idling speed control device for an internal combustion engine having an intake passage and a throttle valve arranged in the intake passage, said device comprising:

a bypass passage interconnecting the intake passage located upstream of the throttle valve to the intake passage located downstream of the throttle valve;

valve means arranged in said bypass passage and having a control valve controlling a flow area of said bypass passage, said valve means having a valve housing and hot fluid passage means, formed in said valve housing, for conducting a heated fluid; and

a stepper motor connected to said control valve for controlling the amount of air flowing within said bypass passage in accordance with a change in the operating condition of said engine at the time of idling, said step motor comprising:

a motor housing,

a rotor rotatably arranged in said motor housing, said rotor including a hollow cylindrical outer body made of a permanent magnet, said hollow cylindrical outer body having an outer circumferential wall on which an N pole and an S pole are alternately formed, a hollow cylindrical intermediate body disposed concentrically within said outer body and made of a metallic material, said intermediate body being supported on said motor housing by means of bearings, and a hollow cylindrical inner body made of a synthetic resin and disposed concentrically within said intermediate body, said inner body having a center hole in which internal thread screws are formed, and

a valve shaft axially movable in said motor housing, said control valve being fixed onto said valve shaft, said valve shaft having external screw threads which are in rotatable engagement with internal screw threads on said inner body.

4,397,276

TWO-SHIFT THROTTLE CONTROL SYSTEM FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

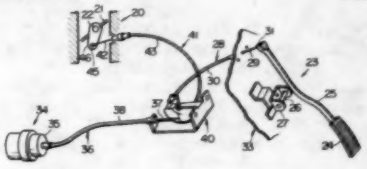
Tsutomu Hayashida, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 17, 1982, Ser. No. 359,055

Claims priority, application Japan, Apr. 15, 1981, 56-752

Int. Cl.³ F02D 9/08

U.S. Cl. 123—342 8 Claims



1. A two-shift throttle control system for an automotive internal combustion engine having a fuel supply system provided in a vehicle body and including a fluid induction pipe and a fluid-flow control valve provided in the induction pipe, comprising a pedal-operated throttle control mechanism, an automatically-operated constant-speed cruising throttle control apparatus, throttle actuating means and a shift control device,

said pedal-operated throttle control mechanism comprising (1) a manually-operated accelerator pedal, (2) a pedal-actuated lever with which the accelerator pedal is engageable, the accelerator pedal being operable for driving the lever for angular motion in first and second directions opposite to each other about an axis fixed with respect to the vehicle body, and (3) a pedal-actuated control cable anchored at one end thereof to the pedal-actuated lever and connected at the other end thereof to said shift control device, the pedal-actuated control cable being pulled toward said pedal-actuated lever when the lever is driven for angular motion in the first direction about said axis,

said automatically-operated constant-speed cruising throttle control apparatus comprising (4) a throttle actuator unit responsive to a preselected vehicle speed and operable for producing a mechanical force variable with the preselected vehicle speed, and (5) an automatically-actuated control cable connected at one end thereof to the throttle actuator unit and at the other end thereof to said shift control device,

said throttle actuating means comprising (6) a throttle actuator lever movable with said fluid-flow control valve, and (7) a throttle drive cable anchored at one end thereof to the throttle actuator lever and connected at the other end thereof to said shift control device, and

said shift control device comprising (8) a shaft having a center axis fixed with respect to the vehicle body, (9) a first rotatable member rotatable on said shaft about the center axis thereof, and (10) a second rotatable member rotatable on said shaft about the center axis of the shaft independently of the first rotatable member, each of the first and second rotatable members being rotatable in first and second directions opposite to each other about the center axis thereof,

each of said pedal-actuated control cable and said throttle drive cable being anchored at said other end thereof to said first rotatable member for driving the first rotatable member to turn in the second direction thereof about the center axis thereof when the pedal-actuated control cable is pulled toward said pedal-actuated lever,

said automatically-actuated control cable being anchored at said other end thereof to said second rotatable member and being pulled away from said shift control device by said mechanical force of said throttle actuator unit for driving the second rotatable member to turn in the second direction thereof about the center axis thereof,

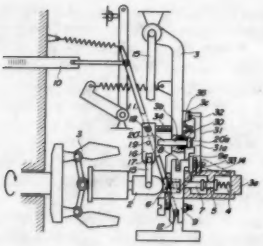
the turning motion of the second rotatable member in the second direction thereof about the center axis of said shaft producing engagement of the second rotatable member with said first rotatable member and resisting turning motion of the first rotatable member in the first direction thereof about the center axis thereof.

4,397,277

CENTRIFUGAL GOVERNOR FOR INTERNAL COMBUSTION ENGINES, HAVING A FUNCTION OF RELEASING ADAPTATION MEANS

Masaatsu Takahashi, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1981, Ser. No. 317,470
Claims priority, application Japan, Nov. 11, 1980, 55-159028
Int. Cl.³ F02D *1/04*
U.S. Cl. 123—373 **7 Claims**



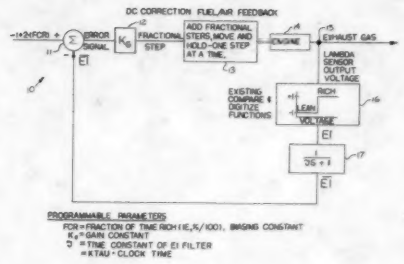
1. In a centrifugal governor for combination with an internal combustion engine, including: flyweights radially displaceable in response to the rotational speed of said engine; a shifter movable in response to radial displacement of said flyweights; a tension lever having one end pivotally supported by a stationary shaft and another free end disposed for urging contact with said shifter; an adaptation spring disposed for counteracting movement of said shifter caused by radially outward displacement of said flyweights; a control spring arranged for applying biasing force to said tension lever in a direction counteracting radially outward displacement of said flyweights; a guide lever connected between said one end of said tension lever and said shifter; a floating lever having one end engaging a control rack; a supporting lever having one end engaging said another free end of said tension lever and another end engaging another end of said floating lever, said supporting lever being angularly displaceable about said one end thereof; a fuel quantity increasing lever having one end engaging said guide lever and another end engaging an intermediate portion of said floating lever; and an adjusting member carried by said tension lever, said adjusting member having one end disposed for urging contact with an intermediate portion of said fuel quantity increasing lever; wherein when the rotational speed of said engine exceeds a predetermined value, said adjusting member comes into urging contact with said fuel quantity increasing lever as said shifter is moved in response to radially outward displacement of said flyweights, further movement of said shifter causing contraction of said adaptation spring whereby said fuel quantity increasing lever is angularly displaced about said intermediate portion thereof to cause said floating lever to displace said control rack in a fuel quantity increasing direction thereof; the improvement comprising means responsive to angular displacement of said supporting lever to displace said adjusting member relative to said fuel quantity increasing lever, said displacing means being adapted to bring said adjusting member into urging contact with said fuel quantity increasing lever when the rotational speed of said engine exceeds a predetermined value at full load operation of said engine, whereby contraction of said adaptation spring causes angular displacement of said fuel quantity increasing lever for increasing fuel injection quantity.

4,397,278

AIR FUEL RATIO CONTROL USING TIME-AVERAGED ERROR SIGNAL

Joseph L. Hughes, Belleville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 3, 1981, Ser. No. 250,983
Int. Cl.³ F02D *33/00*
U.S. Cl. 123—440 **1 Claim**



1. An air fuel ratio feedback type fuel supply system for an internal combustion engine comprising:

sensing means for sensing the quantity of oxygen within the exhaust emission of the engine at a given repetition rate and for providing an output indicating whether the air/fuel ratio is rich or lean of stoichiometry;

control means coupled to receive the output of said sensing means for controlling the rate of supply of fuel to the engine as a function of the quantity of oxygen sensed by said sensing means, said control means responding to said output so that the rate of making the air fuel ratio richer is a function of a first fraction of time a rich air fuel ratio has been indicated by said sensing means and the rate of making the air fuel ratio leaner is a function of a second fraction of time a rich air fuel ratio has been indicated by said sensing means, and said control means not changing the rate of supply of fuel when the fraction of time a rich air fuel ratio has been indicated falls between the first fraction and the second fraction of time;

said control means including a biasing means for comparing the fraction of time a rich air fuel ratio occurs to the fraction of time a rich air fuel ratio is desired, and for generating a difference amount which is processed to yield a correction signal for adjusting the rate of supply of fuel to the engine;

said biasing means having an output means for supplying a discrete, step correction signal; and

said control means being adapted to change the air fuel ratio in accordance with the formula

$$\overline{EI}_{new} = \frac{1\,(EI)}{1 + KTAU} + \frac{KTAU}{1 + KTAU}\,(\overline{EI}_{old})$$

wherein EI is an expression of the sensing means output

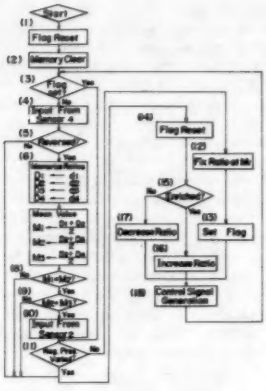
indicating a rich or lean condition, El_{new} is a rolling average based upon El_{old}, the previous rolling average, KTAU is a filter time constant indicating the transient responsiveness of said control means.

4,397,279

AIR-FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Katsuyoshi Iida, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 30, 1981, Ser. No. 279,214
Claims priority, application Japan, Jul. 7, 1980, 55-93142
Int. Cl.³ F02M 7/16
U.S. Cl. 123—440 **4 Claims**



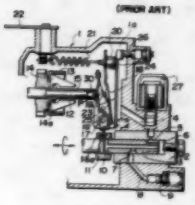
1. An air-fuel ratio control system for an internal combustion engine including a source of combustible air-fuel mixture, an intake passage means for supplying the combustible mixture from the mixture source to the engine, and an exhaust passage means including an exhaust gas purifying unit installed thereon between the engine and the atmosphere, said control system comprising a composition sensor provided on the exhaust passage means at a position between the purifying unit and the engine for detecting the concentration of a particular component contained in exhaust gases emitted from the engine, said concentration being a function of the air-fuel mixing ratio of the combustible mixture burned in the engine, said composition sensor generating an output signal capable of respectively assuming first and second states when the concentration of the particular exhaust gas component is high and low; a control means for determining whether the output signal is in the first state or in the second state and for generating a control signal of a value either increasing or decreasing depending on the output signal when and so long as no change has occurred in the state of the output signal, said control means being further operable, when change has occurred in the state of the output signal, to determine whether the mean value of the highest and lowest values of the control signal has attained a generally identical value at least two times consecutively and also to generate the control signal of the value either increasing or decreasing depending on the output signal if the mean value has not attained a generally identical value at least two times consecutively and to generate a control signal of a value fixed at the means value if the mean value has attained a generally identical value at least two times consecutively; and-an actuator operable in response to the control signal to adjust the air-fuel mixing ratio of the combustible mixture supplied to the engine so as to be a predctermined optimum value.

4,397,280

GOVERNOR MECHANISM FOR A DISTRIBUTOR-TYPE FUEL INJECTION PUMP

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 16, 1980, Ser. No. 150,528
Claims priority, application Japan, May 21, 1979, 54-66801[U]
Int. Cl.³ F02D 1/04, 1/06
U.S. Cl. 123—449 **9 Claims**



1. In a distributor-type fuel injection pump for an internal combustion engine, including:

a pump housing having an inner chamber charged with fuel;

means forming a pump work chamber in communication with said inner chamber;

a distributor plunger adjoining said pump work chamber and delivering a quantity of fuel to said engine for injection during each pressure stroke, said distributor plunger having a relief channel in communication with said pump work chamber;

a control sleeve mounted on said distributor plunger for controlling said relief channel; and

a governor mechanism controlling the axial position of said control sleeve to vary said quantity of injected fuel by changing the terminal moment of fuel delivery during each pressure stroke of said distributor plunger, said governor mechanism having a stationary governor shaft, a governor sleeve axially displaceable on said governor shaft and having an inner space adjoined by said governor shaft and in communication with said inner chamber, centrifugal weights mounted for rotation about said governor shaft and mounted to swing outwardly displacing said governor sleeve in the direction to produce expansion of said inner space, and coupling means providing operative connection between said control sleeve and said governor sleeve;

whereby said control sleeve is displaced in the direction to increase said quantity of injected fuel in response to displacement of said governor sleeve in the direction to produce contraction of said inner space;

the improvement therein comprising:

first channel means for providing restricted communication between said inner chamber and said inner space;

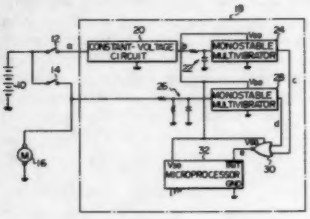
second channel means for providing substantially unrestricted communication between said inner chamber and said inner space; and

valve means operable for permitting only said first channel means to establish said restricted communication upon displacement of said governor sleeve in the direction to produce contraction of said inner space, and for permitting at least said second channel means to establish said substantially unrestricted communication upon displacement of said governor sleeve in the direction to produce expansion of said inner space.

4,397,281
ELECTRONIC CONTROL DEVICE FOR AN AUTOMOBILE

Jiro Nakano, Okazaki; Hironobu Ono, Toyota, and Hideo Miyagi, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 21, 1981, Ser. No. 304,051
Claims priority, application Japan, Sep. 26, 1980, 55-133011
Int. Cl.³ F02B 3/00
U.S. Cl. 123—486 7 Claims



1. An electronic control device for an automobile having an internal combustion engine, a starter motor for cranking the engine and a common power supply for the starter motor and for the electronic control device, comprising:

a first circuit for producing a first reset pulse when power is initially supplied to the electronic control device;

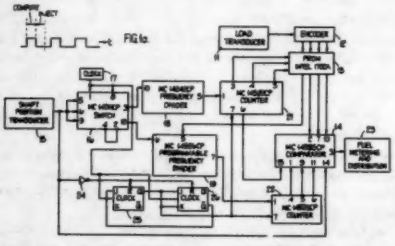
a second circuit for producing a second reset pulse when the engine is cranked by the starter motor; and

an electric digital computer initialized in response to both of said first and second reset pulses.

4,397,282
FUEL INJECTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Peter H. Salway, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, United Kingdom

Continuation of Ser. No. 624,601, Oct. 22, 1975. This application Mar. 22, 1978, Ser. No. 888,979
Claims priority, application United Kingdom, Oct. 25, 1974, 46392/74
Int. Cl.³ F02B 3/00
U.S. Cl. 123—487 2 Claims



1. Apparatus for controlling the timing of commencement of injection of fuel in a diesel engine comprising the combination of

(a) an empirically programmed read only memory for producing an multi-bit digital output signal in accordance with values of two independently variable multi-bit digital input signal for application to the read only memory;

(b) engine load sensitive means generating one multi-bit digital signal for application to the read only memory;

(c) engine crankshaft position transducer means mechanically connected to the engine and producing a train of marker pulses occurring at specific angular positions of the crankshaft, at least one of said marker pulses occurring at a datum position of said crankshaft;

(d) a fixed frequency oscillator;

(e) a first counter;

(f) first pulse routing means controlled by said transducer means for routing pulses from said oscillator to said first counter for a first period between two of said marker pulses, so that said first counter accumulates a count representing engine speed;

(g) said first counter being connected to the read only memory so as to apply thereto the other of said two multi-bit digital input signals,

(h) a second counter;

(i) second pulse routing means controlled by said transducer means for routing pulses from said oscillator to said second counter for a subsequent period commencing when said at least one marker pulse occurs, so that said second counter accumulates a count representing the time elapsed since said at least one marker pulse occurred;

(j) comparator means connected to the memory and the second counter and producing an output signal when the multi-bit digital output signal of the read only memory, and the count in the second counter are equal; and

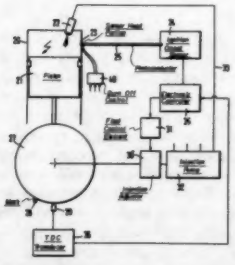
(k) fuel injection control means connected to said comparator means and operating to commence injection when the comparator means produces an output signal;

(l) the read-only memory being empirically programmed to provide a desired relationship between the time elapsing between the datum marker pulse produced by the transducer means, and the comparator producing its output signal, the engine speed, and the value of the engine load, with the said first and second routing means including a common switch circuit controlled by the transducer means and the oscillator and arranged to direct the oscillator pulses either to the first counter or to the second counter in accordance with the output of the transducer means.

4,397,283
IGNITION ONSET SENSOR FOR INTERNAL COMBUSTION ENGINES

Iwan Komaroff, Regensburg, and Katsucki Itoh, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 103,926, Dec. 18, 1979, abandoned. This application Jan. 29, 1982, Ser. No. 344,104
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905506
Int. Cl.³ F02B 3/00; G01K 21/76; F02M 39/00; F02P 5/04
U.S. Cl. 123—494 8 Claims



1. An ignition onset sensor for indicating the onset of ignition in a combustion chamber of an internal combustion engine, in response to variations in the intensity of light transmitted from the combustion chamber, comprising:

a casing having one end connected to the combustion chamber and which defines an opening to the combustion chamber for receiving light therefrom,

an opto-electric converter means having a receiver end surface facing the combustion chamber to receive light therefrom through said opening for generating an ignition onset signal,

cleaning means for cleaning the receiver end surface, including

electric heating means disposed within the casing adjacent the receiver end surface, for burning away dirt accumulating on the receiver end surface, and

heat actuating means for actuating the electric heater means.

4,397,284

DISTRIBUTION TYPE FUEL INJECTION PUMP

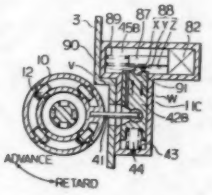
Nobuhiro Kaibara, Higashimatsuyama, and Masayoshi Kobayashi, Kawagoe, both of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Division of Ser. No. 920,627, Jun. 29, 1978, Pat. No. 4,271,806. This application Dec. 31, 1981, Ser. No. 221,928

Claims priority, application Japan, Jun. 30, 1977, 52/77177; Jun. 30, 1977, 52/77178

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—502 **6 Claims**



1. A fuel injection pump for use in a fuel injection combustion engine, comprising:

a housing having a fuel chamber therein;

a plunger movably mounted in said housing and forming a plunger chamber over a head of said plunger;

first cam means fixedly mounted on said plunger;

second cam means turnably mounted on said housing and cooperating with said first cam means so as to cause reciprocal motion of said plunger along the axis thereof during plunger rotation with respect to said cam means, said second cam means being capable of being positioned in one of a plurality of angular positions thereof;

fuel supply means for introducing fuel into said plunger at the suction stroke of said plunger;

a delivery port for feeding fuel to the engine from said plunger chamber at the delivery stroke of said plunger;

a leak port formed in said plunger and connected to said plunger chamber;

a control sleeve slidably mounted on said plunger for normally closing said leak port and for connecting said leak port to said fuel chamber at the end of the delivery stroke to terminate the fuel injection;

a governor device actuating said control sleeve for controlling the quantity of fuel to be injected;

injection timing control means for controlling the angular position of said second cam means in response to the engine speed so as to displace said second cam means to advance the injection timing in response to an increase in engine speed;

said injection timing control means comprising a first piston slidably fitted into a first cylinder and connected to said second cam means via a first rod, said first piston being urged by elasticity of a first spring to urge said second cam means towards injection timing retarding and said first piston being effected by hydraulic pressure of fuel, in response to the engine speed, introduced into a first pressure chamber to move said second cam means towards injection timing advancing against said elasticity of said spring, said first piston moving in accordance with the difference between said elasticity and said pressure in said pressure chamber, said first piston being provided with a fuel passage therethrough for communicating said first pressure chamber with said fuel chamber in said housing, said fuel passage being in comunication with said fuel chamber through said housing; and

injection timing adjusting means for providing an adjusted movement of said second cam means toward a predetermined angular position to advance the injection timing at the engine start, said injection timing adjusting means comprising a wax pellet actuator contained in said first pressure chamber of said injection timing control means, said actuator being provided with a wax pellet capable of expanding or contracting in response to engine temperature, a third rod connected to said wax pellet actuator at its one end and a return spring provided at its other end to urge same towards said wax pellet, said third rod having a cam face disposed on the side face thereof to bear against said first piston, said cam face provided with a first cam face for moving said first piston of said injection timing control means in the direction of said fuel injection timing advancing at the time of engine start in cold conditions, a second cam face for freeing said injection timing advancing of said injection timing control means when said engine has reached a warmed-up condition.

4,397,285

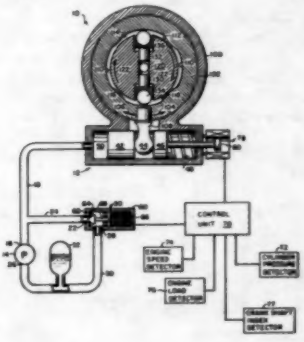
CLOSED LOOP DIESEL ENGINE CONTROL

Cormac G. O'Neill, Walnut Creek, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed Jul. 15, 1981, Ser. No. 283,387

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—502 **13 Claims**



1. In a diesel internal combustion engine comprising

means defining a cylinder having a cylinder head,

a piston disposed in said cylinder and adapted to move toward and away from said cylinder head,

a crankshaft connected to said piston and driving a load,

a fuel injection system connected to said cylinder and having a fuel injection pump,

the improvement comprising

means for detecting peak cylinder pressure inside of said cylinder and generating a peak cylinder presssure signal,

means for measuring the speed of said crankshaft and generating a speed signal proportional to said crankshaft speed,

means for measuring said load on said engine and generating a load signal proportional to said engine load,

means for measuring crankshaft timing relative to peak cylinder pressure and generating an actual crankshaft timing signal,

a speed-load-timing map having a speed axis, a load axis and a timing axis,

means for continuously comparing crankshaft speed with said speed axis of said speed-load-timing map,

means for continuously comparing engine load with said engine load axis of said speed-load-timing map,

means for measuring a timing value along said timing axis of said speed-load-timing map according to the value represented at the intersection of speed and load coordinate values and generating an optimum crankshaft timing signal,

means for comparing said actual crankshaft timing signal and said optimum crankshaft timing signal and generating a crankshaft timing difference signal, and

means for adjusting the timing of said fuel injection based on said crankshaft timing difference signal to reduce said difference signal to zero and achieve optimized efficiency combustion.

4,397,286

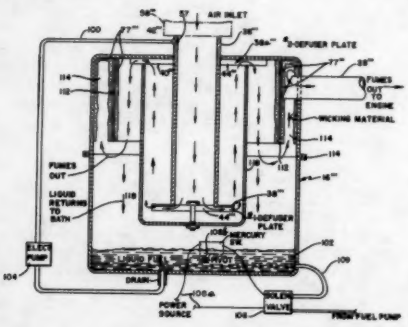
VAPOROUS GASOLINE ASPIRATION SYSTEM AND FUMING TANK

Kenneth A. Jackson, Wooster, and George I. Arndt, Loudonville, both of Ohio, assignors to V.G.A.S., Inc., Wooster, Ohio

Continuation-in-part of Ser. No. 151,170, May 19, 1980, Pat. No. 4,366,797. This application Aug. 20, 1980, Ser. No. 179,679

Int. Cl.³ F02M *17/18*

U.S. Cl. 123—523 **4 Claims**



1. A fume tank adapted for use in providing vaporous fuel to fuel delivery means of a gasoline powered engine, said tank comprising an enclosure adapted to receive in the bottom thereof a pool of liquid fuel, means for transmitting fluid including atmospheric air into said enclosure from exteriorly thereof, means coacting with said transmitting means for insertion of liquid ignitable fuel into said transmitting means responsive to the actuation of said engine, means for removing vaporous fuel from said enclosure for transmittal to associated fuel delivery means of the engine, means disposed above the liquid pool and coacting with and mounted on the lower end near the outlet of the transmitting means for dispersing fuel-air mixture from said admitting means into said enclosure in a swirling-like effect, and other means coacting with and mounted on the opposite end of the transmitting means for reversing the direction of the swirling-like effect to the fuel air mixture in said enclosure prior to its being supplied to the means for removing the vaporous fuel.

4,397,287

METHOD AND APPARATUS FOR LIQUEFYING AND/OR HEATING A FLUID

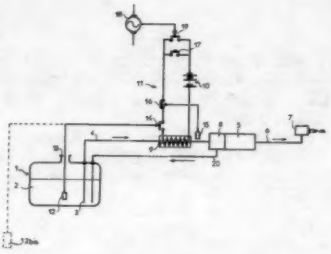
Jocelyn Pierard, Z. I. Villers Semeuse, 08000-Charleville Mezieres, France

Filed Sep. 15, 1980, Ser. No. 187,526

Claims priority, application France, Sep. 17, 1979, 79 23744

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **8 Claims**



1. In a fuel system for diesel internal combustion engine of a vehicle having a storage battery and an alternator supplying current to said battery, said system comprising fuel injection nozzles, pump means for supplying liquid fuel under pressure to said injection nozzles, fuel filter means immediately upstream of said pump means for filtering fuel supplied to said pump means, a fuel tank and a fuel line connecting said fuel tank with said filter means, the improvement comprising an electric heating element for heating fuel in said fuel line immediately upstream of said filter means to a temperature below the vaporization point to avoid filter-clogging deposits in said filter means, means for sensing the the temperature of fuel in said fuel tank, and an electric circuit supplying current from said alternator and battery to said heating element, said circuit including first switch means controlled by said temperature sensing means and second switch means connected in series with said first switch means and controlled by contact means controlling operation of the engine means to supply electricity to the electric heating element to heat the fuel only when said engine is in operation and when the temperature of fuel in said fuel tank is below a predetermined value.

4,397,288

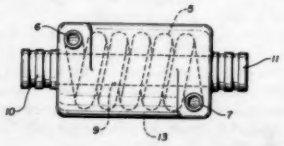
DIESEL FUEL WARMER

Gordon L. Kelling, Minnetonka, Minn., assignor to Phillips Temro, Inc., Eden Prairie, Minn.

Filed May 1, 1981, Ser. No. 259,473

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **15 Claims**



1. A fuel warmer, comprising:

(a) a cold-rolled steel helical coil having end portions constructed and arranged to be interposed within the fuel line of a liquid-cooled internal combustion engine; and

(b) a cast aluminum encapsulant cast in situ around said coil intermediate the said end portions and defining an inte-

grally cast cylindrical coolant conduit extending therethrough;

(c) said conduit extending along the axis of said coil and having opposite end portions constructed and arranged to be interposed within the coolant line of such a liquid-cooled internal combustion engine; and

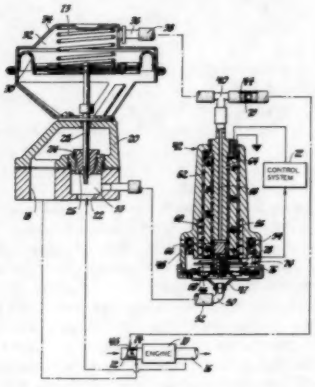
(d) said conduit-defining encapsulant comprising the sole coolant conduit of said fuel warmer.

4,397,289

SELF-CALIBRATING EXHAUST GAS RECIRCULATION SYSTEM

Raymond J. Haka, Rochester, Mich., and Donald D. Stoltman, Henrietta, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1981, Ser. No. 312,275
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **3 Claims**



1. In a motor vehicle combustion engine having an air induction passage, an exhaust passage, an EGR passage interconnecting the exhaust and induction passages effective to selectively return a portion of the exhaust gases from the exhaust passage to the induction passage through a flow restriction and an adjustable EGR valve which define a pressure chamber therebetween, and a transducer effective to adjust the EGR valve in response to a sensed error between a controlled reference pressure value and the pressure in the pressure chamber to establish an EGR rate producing a pressure in the pressure chamber that reduces the sensed error to substantially zero, the EGR valve being closed during a predetermined engine operating condition so that the pressure in the pressure chamber is equal to the exhaust pressure, the improvement comprising:

means effective during the predetermined engine operating condition at which the EGR valve is closed to generate and store a reference pressure value that establishes a predetermined relationship between the reference pressure value and the pressure in the pressure chamber, the stored reference pressure value comprising a calibration value that is a measure of the exhaust pressure at the predetermined engine operating condition; and

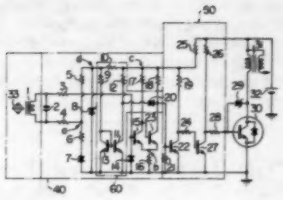
means effective during other engine operating conditions to generate a reference pressure value that is substantially equal to the calibration value adjusted by an amount in accord with an EGR schedule dependent upon the engine operating condition, whereby the EGR control system is periodically recalibrated during engine operation with reference to the exhaust pressure at the predetermined engine operating condition.

4,397,290

SUPPLY-VOLTAGE-COMPENSATED CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toshio Tanaka, Anjo, and Tomoatsu Makino, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 23, 1981, Ser. No. 256,833
Claims priority, application Japan, May 23, 1980, 55-68602
Int. Cl.³ F02P *3/04*
U.S. Cl. 123—618 **12 Claims**



1. A contactless ignition system for internal combustion engines comprising: a DC power source for supplying a DC voltage;

an ignition coil;

a signal generator for generating a synchronizing signal in synchronism with the rotation of an engine;

switch means for controlling a current flowing to said coil from said DC power source;

control means for controlling said switch means in response to said synchronizing signal, said control means including:

input transistor means,

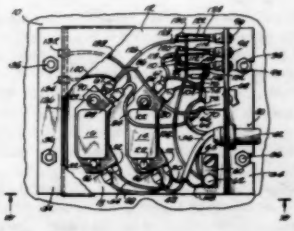
compensation means for changing an operating level of said input transistor means in response to change of the DC voltage of said power source, said compensation means including a current mirror circuit for changing said operating level at a first rate of change with change of said DC voltage not larger than a predetermined value and changing said operating level at a second rate of change larger than said first rate of change with change of said DC voltage not smaller than said predetermined value.

4,397,291

MEANS FOR MOUNTING IGNITION CONTROL MODULES

Arthur D. Johnson, Muskego, Wis., assignor to Wells Manufacturing Corporation, Fond du Lac, Wis.

Filed Sep. 10, 1981, Ser. No. 301,105
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—640 **2 Claims**



1. An ignition control assembly for use in a vehicle having an engine, the engine including a distributor, the ignition control assembly comprising:

a first ignition control module including circuit means adapted

to be selectively connected to the distributor for controlling electrical operation of the distributor,

a redundant ignition control module including circuit means adapted to be selectively connected to the distributor for controlling electrical operation of the distributor,

means for mounting said first control module and said redundant control module in a location remote from said distributor,

means for alternatively providing an electrical connection between said first control module and the distributor and between said redundant control module and the distributor,

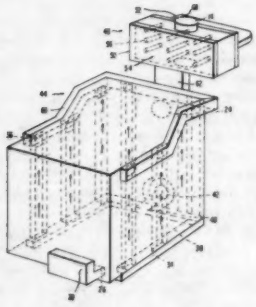
wherein said means for mounting includes a metal plate having opposite sides, one of said sides including a planar surface, said modules being supported by said surface and the other side of said plate including means for dissipating heat, said means for dissipating heat including a plurality of parallel spaced apart vanes extending from said other side.

4,397,292

CIRCULATING AIR SPACE HEATER

Francis Mitchell, 702 E. 8th, Winfield, Kans. 67156

Filed Oct. 9, 1981, Ser. No. 310,273
Int. Cl.³ F24B 3/00
U.S. Cl. 126—61 **5 Claims**



1. A stove for burning solid fuel fabricated from a plurality of sheet metal modular assemblies comprising:

(a) a first assembly comprising a combustion chamber with sheet metal top, floor, front, rear and a pair of oppositely disposed side walls, an air duct at the lower front of said first assembly for conducting outside air into said stove, a movable louver member inside said duct varying the degree of admittance of said air through said duct, flue pipe means having one end at a location inside said stove and the other end for exhausting combustion products from said stove,

(a) a plurality of fire bricks lining said floor, said rear, and said side walls,

(c) a plurality of sheet metal spaced vertical ducts positioned along said rear wall and said side walls staggered between said fire bricks lining said rear wall and said side walls extending substantially from the bottom to the top of said rear wall having air inlet openings at the bottom of said vertical ducts to allow air to rise from the bottom through said ducts, and air outlet openings at the top of said vertical ducts to allow said air to discharge into the ambient air,

(d) a second assembly comprising horizontal channel means to be attached to the bottom of said first assembly in communication with said vertical duct inlets, said channel having an inlet provided with blower means for conducting outside air into said vertical ducts,

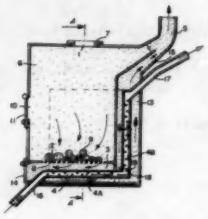
(e) a pivotally mounted door in the front wall to provide access to the stove for the introduction of wood or other solid fuel.

4,397,293

HEATING APPARATUS COMPRISING A HEAT RECOVERY APPARATUS

Thierry Pibernat, Route de Saint Memy, 81300 Graulhet, France

Filed May 21, 1981, Ser. No. 266,079
Claims priority, application France, May 21, 1980, 80 11742
Int. Cl.³ F24B 5/00
U.S. Cl. 126—69 **15 Claims**



1. A heating apparatus comprising:

(a) a plurality of walls;

(b) at least one combustion air inlet;

(c) a reverse-draft hearth having a grill located within a hearth plate;

(d) an ash receptacle for recovering combustion wastes;

(e) a fume evacuation outlet;

(f) a combustion chamber positioned under said hearth; and

(g) a heat recovery device adapted to retain a heat-exchange fluid, said heat recovery device being positioned at least partially under said hearth, and comprising at least one casing positioned between said hearth and said ash receptacle and spaced from said apparatus walls, said casing including a rear portion which is connected to said hearth plate by means for blocking combustion gases, said apparatus including means for conducting combustion gas first above said casing, then under said casing, and means for combining said gas with smoke being evacuated through said outlet.

4,397,294

SOLAR WATER HEATING SYSTEM

Ronald A. Mancebo, 4320 Old 44 Dr., Redding, Calif. 96003

Filed Aug. 10, 1981, Ser. No. 291,281
Int. Cl.³ F24J 3/02
U.S. Cl. 126—121 **6 Claims**

1. A solar water-heating system comprising:

a. a domestic water storage tank having a cold-water inlet and a hot-water outlet;

b. a non-pressurized solar-heated water storage tank placed directly atop said domestic water storage tank and having an open area in the center;

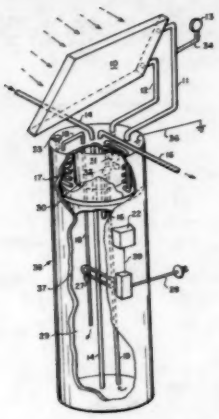
c. a heat exchanger placed inside said non-pressurized solar-heated water storage tank and connected through two pipes to said domestic water storage tank;

d. first pump means for pumping heated liquid through said non-pressurized solar-heated water storage tank;

e. second pump means for pumping water from said domes-

tic water storage tank through said heat exchanger and back into said domestic water storage tank;

f. a solar collector, and



g. means for connecting said solar collector to said non-pressurized solar-heated water storage tank.

4,397,295

BURNER FOR BURNING PULVERIZED FUEL

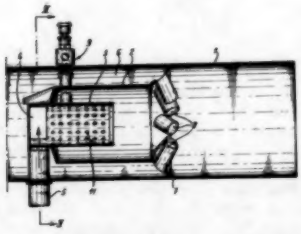
Aalbert Bakker, Franselaan 260, 3028 AS Rotterdam, Netherlands

Filed Nov. 7, 1980, Ser. No. 204,839

Claims priority, application Netherlands, Nov. 12, 1979, 7908259

Int. Cl.³ F23M 9/00

U.S. Cl. 431—185 3 Claims



1. A burner for burning pulverized fuel, said burner comprising a combustion chamber, an ignition chamber connected to said combustion chamber, means for supplying combustion air to said combustion chamber at approximately the location of the connection between the ignition chamber and the combustion chamber, a distribution pipe in said ignition chamber, means for delivering a mixture of pulverized fuel and pneumatic conveying air to one end of said distribution pipe, said delivery means including means for imparting rotary movement to the mixture of fuel and air causing it to flow along the wall of th distribution pipe, said distribution pipe having a plurality of openings distributed circumferentially and axially along the wall thereof allowing the mixture of fuel and air to flow gradually outwardly of said distribution pipe into said ignition chamber as it flows through the pipe in an axial direction, the end of the distribution pipe remote from said delivery means opening toward the combustion chamber, and an ignition device in said ignition chamber disposed outwardly of said distribution pipe for igniting the mixture of fuel and air as it exits the distribution pipe through said openings.

4,397,296

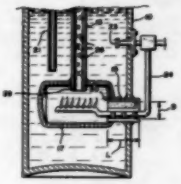
WATER HEATER WITH SUBMERGED COMBUSTION CHAMBER

Henry J. Moore, Jr., Los Angeles, and Lindy J. Bressickello, Baldwin Park, both of Calif., assignors to Mor Flo Industries, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 159,180, Jun. 13, 1980, Pat. No. 4,328,791. This application Dec. 7, 1981, Ser. No. 327,765

Int. Cl.³ F24H 1/20; F22B 5/00

U.S. Cl. 126—360 A 5 Claims



1. A water heater including, in combination:

(a) a vertical cylindrical water tank having a top opening coaxial with its vertical cylindrical axis and a side opening in its side wall;

(b) a vertical open-ended cylindrical flue pipe within said tank, the upper end of said pipe passing through and being secured to the periphery of said top opening so as to be supported by said tank;

(c) an horizontal inlet cylinder having an outer end passing through and secured to the periphery of said side opening so as to be supported by said tank;

(d) a combustion chamber disposed within said tank and having a top opening and a side opening receiving, respectively the lower end of said flue pipe and the inner end of said inlet cylinder in sealingly secured relationship so that a waterproof air passage is defined through said inlet cylinder into the combustion chamber and out of the flue pipe and so that said combustion chamber is supported relative to the tank wholly by said flue pipe and inlet cylinder in position so as to be totally submerged in water in the tank, the interior dimensions of the chamber being greater than either of the diameters of the flue pipe and the inlet cylinder to provide an acoustic impedance to air and gas flow and thereby avoid acoustic resonances;

(e) a gas burner means receivable through said inlet cylinder into said chamber said gas burner means including a body of width and length corresponding to the inside diameter and length of said inlet cylinder, said body having an upturned outer end of semi-circular shape dimensioned to fit in the upper half of the outer end of said inlet cylinder; supports extending from the underside of said body, a gas line extending along the underside of said body secured to said supports and terminating in a gas flame burner ring, and fiberglass insulation material on the top side of said body, said entire body, supports and gas line being slidable as a unit into said inlet cylinder, the gas line and burner being held in a central consistent position against yawing movement by engagement and support of the long sides of said rectangular body with inner diametrically opposite surfaces of said inlet cylinder;

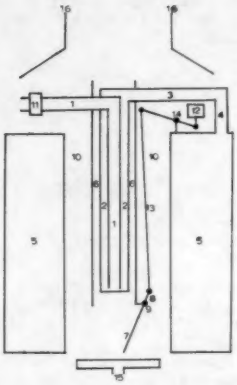
(f) a cold water inlet for passing water into the lower half of the tank;

(g) a hot water outlet for passing water out from the upper half of the tank; and

(h) a thermostat in the side wall of the tank connected to turn on the gas burner means whenever the temperature of water in the tank falls below a given minimum temperature set in the thermostat and to turn off the gas burner

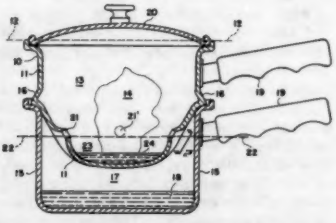
means whenever the temperature of water rises above a given maximum temperature set in the thermostat.

4,397,297
WATER HEATER HEAT RECLAIMER
Chwang T. Wie, 7041 Yosemite, Lincoln, Nebr. 68507
Filed Mar. 11, 1981, Ser. No. 242,601
Int. Cl.³ F24H 1/00
U.S. Cl. 126—365 2 Claims



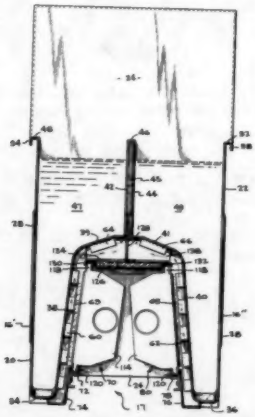
1. A water heating system comprising of the combination of a water heater tank exposed to a burner, a water preheating mean adapted to be only conditionally exposed to said burner, outlet and inlet conduits connecting said preheating mean with said water heater tank, and a controlled heat shield around said water preheating mean and operatively adapted to expose said preheating mean to said burner only during periods with appreciable hot water usage rate.

4,397,298
UTENSIL FOR COOKING FOOD BY STEAMING
Anne C. Abell, R.R. 1, Box 202, Perrin Rd., Woodstock, Conn. 06281
Filed Jan. 26, 1981, Ser. No. 228,125
Int. Cl.³ F24D 1/00
U.S. Cl. 126—369 10 Claims



1. A utensil for cooking food by steaming, said utensil comprising a boiler and a food holder, wherein:
(a) said boiler has a lower region in which an aqueous liquid may be boiled to produce steam;
(b) said food holder has a wall extending to an upper level, said wall and said upper level defining a holder volume, within said food holder, in which said food may be held above said lower region;
(c) said wall has at least one perforation through which said steam may pass from said lower region to said holder volume to cook said food by steaming;
(d) said at least one perforation is above a lower level, said wall and said lower level defining a sump volume within said food holder; and
(e) said sump volume is at least 0.1% of said holder volume.

4,397,299
DEEP FAT FRYER
Cecil K. Taylor, Crownsville, and Gerald W. Sank, Pasadena, both of Md., assignors to Vulcan-Hart Corporation, Baltimore, Md.
Filed Apr. 15, 1981, Ser. No. 254,316
Int. Cl.³ A47J 37/12, 27/00
U.S. Cl. 126—391 16 Claims



1. A deep fat fryer comprising a vat for receiving cooking oil and infrared type gas burner means associated with and adjacent said vat, means for providing fuel gas and air to said burner means with the air being in an amount substantially no greater than that necessary for complete combustion to occur to effect the heating of said vat and cooking oil therein by applying heat to the vat with a substantial portion of the heat being applied in the form of radiant heat with a minimum amount of heat being lost to the heating of excess combustion air and baffle means defining a tortuous path for the discharge of the combustion gases from the gas burner means in heat exchange relation to the vat, wherein said vat is of generally inverted U-shape including a front-to-rear extending tunnel having sides defined by mutually facing spaced first and second internal walls and additionally including first and second burner clamp means respectively extending inwardly from lower areas of said first and second internal walls and wherein said infrared gas burner means includes first and second gas burner units respectively supported on, and held by, said first and second burner clamp means and each gas burner unit has apertured means respectively having outer surfaces spaced from but each facing an outer surface of one of said internal walls to define a generally vertically extending side draft chamber therebetween with combustion occurring adjacent said apertured means for heating the outer surface thereof to cause the outer surface to emit substantial quantities of infrared radiation which impinges on the internal walls.

4,397,300

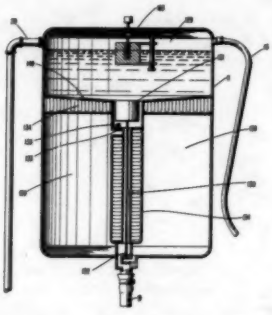
CLOSED LOOP SOLAR COLLECTOR SYSTEM WITH DUAL CHAMBER FLUID SUPPLY ARRANGEMENT

Barry W. Johnston, 1622 Que St., NW., Washington, D.C. 20009

Division of Ser. No. 146,424, May 5, 1980, Pat. No. 4,354,483, which is a continuation-in-part of Ser. No. 43,799, May 30, 1979, Pat. No. 4,286,579. This application Apr. 13, 1982, Ser. No. 368,083

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—419 **7 Claims**



1. A closed loop solar collecting system, comprising:

(a) a fluid receiver for collecting solar energy;

(b) fluid supply means connected to supply said receiver with a quantity of vaporizable heat transfer fluid, said supply means including a first chamber having an inlet to receive said fluid and an outlet for discharging fluid to the receiver, a second chamber connecting to supply said receiver when fluid in said first supply chamber reaches a predetermined level, and valve means for providing fluid communication between said first and second chambers when fluid in the first chamber reaches said predetermined level to supply fluid to said second chamber from the first chamber, said valve means being further operable to enable fluid flow to said receiver substantially only from said first chamber when fluid therein is above said predetermined level, thereby circulating a smaller amount of fluid through the collecting system to reduce heat loss;

(c) means for precisely metering fluid from said supply means to the receiver; and

(d) heat exchanger means connected to said receiver for absorbing heat energy from fluid vaporized in said receiver, said vaporized fluid condensing after releasing its latent heat of vaporization to the heat exchanger and flowing back to the first chamber in the supply means under pressure provided by the vaporized fluid.

4,397,301

METHOD OF CONTROLLING A SOLAR SYSTEM COLLECTOR LOOP

Thomas Onno, Ottawa, Canada, assignor to Canadian Patents & Dev. Limited, Ottawa, Canada

Filed Aug. 25, 1981, Ser. No. 296,118

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—422 **4 Claims**

1. A method of controlling a solar collector loop having a solar collector with an absorber plate, a heat storage unit and a pump for circulating a fluid between the collector and storage, comprising:

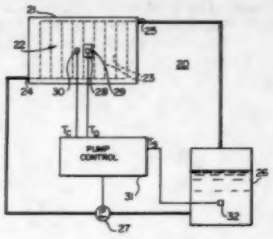
determining the temperature T_C of the collector absorber plate;

determining the stagnation temperature T_Q of the collector absorber plate;

determining the temperature T_S of the storage unit;

computing the difference ΔT_C between the collector temperature T_C and the storage temperature T_S;

turning the pump on when ΔT_C is greater than a predetermined value T_{on};



computing the difference ΔT_Q between stagnation temperature T_Q and the collector temperature T_C; and

turning the pump off when ΔT_Q is smaller than a predetermined value T_{off}.

4,397,302

NON-FOCUSING SOLAR ENERGY CONCENTRATOR

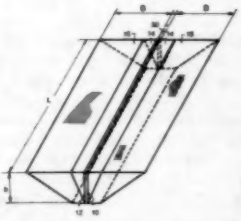
Zvi Moravnik, Shmuel Hanatziv St. 41, Netanya, Israel

Filed Sep. 4, 1980, Ser. No. 184,020

Claims priority, application Israel, Sep. 9, 1979, 57860; May 22, 1980, 60137

Int. Cl.³ F24J *3/02*; G02B *5/04*

U.S. Cl. 126—440 **7 Claims**



1. Non-focusing solar energy concentration apparatus comprising:

first and second closely spaced parallel back-to-back solar energy absorbing plates having a low emissivity coating and arranged in communication with flowing fluid therebetween for heat transfer thereto, each plate defining a planar surface and having a first surface area;

solar energy transmissive material disposed adjacent said first and second parallel absorbing plates and defining co-planar first and second incident surfaces arranged to receive incident radiation from the sun, each of said first and second incident surfaces having a surface area which is greater than said first surface area, said solar energy transmissive material also defining first and second adjacent surfaces disposed adjacent said first and second parallel absorbing surfaces for transmitting radiation thereto;

said first and second incident surfaces lying perpendicular to said first and second absorbing surfaces;

said transmissive material having an index of refraction and a configuration selected to provide total internal reflection at said first and second incident surfaces of radiation incident on said incident surfaces within a predetermined azimuthal range,

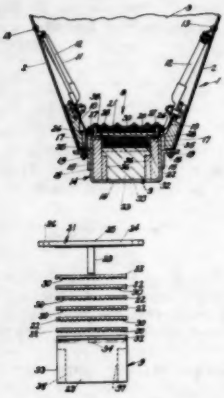
said plates being surrounded externally along said planar surfaces by said transmissive material thus providing thermal insulation for said plates.

4,397,303

HEAT EXCHANGER FOR CONCENTRATING SOLAR COLLECTORS AND METHOD FOR MAKING THE HEAT EXCHANGER

Richard A. Stultz, Franklin, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed Feb. 9, 1981, Ser. No. 232,573
Int. Cl.³ F24J 3/02
U.S. Cl. 126—442 40 Claims



1. An assembly for collecting solar energy comprising:

conduit means for transporting a heat exchange fluid, said conduit means including an opening in the upper surface thereof;

heat exchanger means positioned within said opening and extending into said conduit means comprising a plurality of stacked heat conducting heat exchanger plates having means oriented to form flow passages extending in the direction of fluid flow, said orienting means including means for aligning said plates with each other to assure that said flow passages extend in the direction of fluid flow; and

means for converting solar radiation to heat energy positioned on said heat exchanger means, said heat exchanger means operating to transfer heat from said converting means to the heat exchange fluid.

31. In an assembly for collecting solar energy having conduit means containing an opening in the upper surface for transporting a heat exchange fluid, heat exchanger means positioned within said opening and extending into said conduit means, and means for converting solar radiation to heat energy positioned on the heat exchanger means, the heat exchanger means operating to transfer heat from the converting means to the heat exchange fluid, a method for making the heat exchanger comprising:

providing a plurality of heat conducting plates having means for forming a plurality of flow passages;

stacking said plates in adjacent relationship and orienting said plates with respect to each other and said conduit such that said flow passage forming means form flow passageways extending generally in the direction of fluid flow within the conduit to permit flow of the heat exchange fluid therethrough when said stacked plates are mounted within the conduit means opening; and

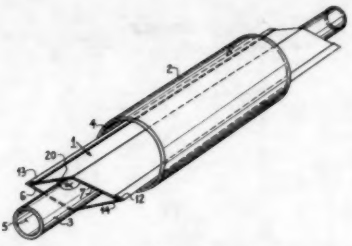
providing means for mounting said heat exchanger within said opening.

4,397,304

SOLAR SENSOR EQUIPPED WITH SOLAR ENERGY ABSORBING MEMBER AND PANEL HAVING SUCH SENSORS

Jacques Villain, Paris, France, assignor to Compagnie des Lampes, France

Continuation of Ser. No. 103,082, Dec. 12, 1979, abandoned.
This application Jan. 18, 1982, Ser. No. 340,020
Claims priority, application France, Dec. 28, 1978, 78 36676
Int. Cl.³ F24J 3/02
U.S. Cl. 126—443 10 Claims



1. A solar sensor comprising an outer tubular transparent glass envelope and an inner tubular glass envelope defining between them an enclosure which is placed under vacuum, the inner envelope serving as a wall of a recess which itself receives a heat exchanger, and a solar energy absorbing member introduced between the outer and inner envelopes, said absorbing member comprising two sheets made from a metal, each of which is folded in accordance with an angle α, such that after assembly of said two sheets the absorbing member has a lozenge-shaped cross-section surrounding the inner envelope and resiliently engaging with the latter in four contact zones.

10. A solar panel comprising a plurality of solar sensors arranged overhead, each of said solar sensors comprising an outer tubular transparent glass envelope and an inner tubular glass envelope defining between them an enclosure which is placed under vacuum, the inner envelope serving as a wall of a recess which itself receives a heat exchanger, and a solar energy absorbing member introduced between the outer and inner envelopes, said member comprising two sheets made from a good heat conducting material, each of which is folded in accordance with an angle α, such that after assembly of said two sheets the absorbing member has a lozenge-shaped cross-section surrounding the inner envelope and resiliently engaging with the latter in four contact zones.

4,397,305

SOLAR HEATING PANEL

Richard A. Keefe, Wilmette, Ill., assignor to Solaroi, Inc., Wilmette, Ill.

Filed Oct. 14, 1981, Ser. No. 311,196
Int. Cl.³ F24J 3/02
U.S. Cl. 126—448 6 Claims

1. A solar heating panel comprising:

a. a collecting member of a sheet of radiation absorbing plastic material having an inlet manifold and an outlet manifold at opposite ends thereof with a plurality of channels within said sheet extending between and connecting said manifolds, whereby a path is provided for a flowing heat transfer fluid;

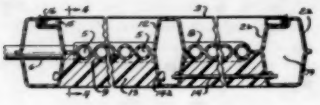
b. a hollow frame, consisting of an interior and exterior wall enclosing an interior passageway, around the periphery of the collecting member, said member being connected at each point of its periphery to the approximate midpoint of the interior wall of said frame;

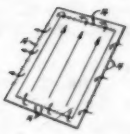
c. a transparent glazing secured to the upper surface of the hollow frame forming an air plenum, said glazing being at

least two inches above the upper surface of the collecting member;

d. a venting surface in the interior wall at the top and bottom sides of said frame and located between the collecting member and glazing, said surface comprising openings communicating with the air plenum and the interior passageway of the hollow frame;

e. openings at opposite sides of the exterior walls communicating with the interior passageway of the hollow frame and the external environment, the surface area of the





openings on each side being at least as large as said venting surface;

f. inlet and outlet passageways extending through the hollow frame and firmly joined to the inlet and outlet manifold, respectively;

g. foamed in insulation secured by retaining rods placed in oversized routed out slots whereby convective heat losses from the bottom of said collecting member is reduced,

the mainframe of said panel being of unitary construction of essentially the same plastic material.

4,397,306

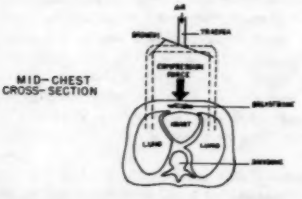
INTEGRATED SYSTEM FOR CARDIOPULMONARY RESUSCITATION AND CIRCULATION SUPPORT

Myron L. Weisfeldt, Baltimore; Joshua E. Tsitlik, Reisterstown, and Nisha Chandra, Towson, all of Md., assignors to The John Hopkins University, Baltimore, Md.

Filed Mar. 23, 1981, Ser. No. 246,436

Int. Cl.³ A61H *31/00*

U.S. Cl. 128—28 **9 Claims**



1. An integrated system for cardiopulmonary resuscitation and circulation support comprising chest compression means adapted to be positioned over the patient's sternum and operable to compress the sternum at desired intervals and to a desired degree, lung ventilating means including (1) a high pressure ventilator for ventilating simultaneously with chest compression; (2) a low pressure ventilator for inflating the lungs at low pressure between a selected number of compression cycles; and (3) a negative pressure ventilator for deflating the lungs between chest compressions; valve means for selectively operating only one of the indicated ventilators at any one time; means for restricting the abdomen to exert pressure on the abdominal wall; and automatically operable control means for selectively operating the chest compression means, the lung ventilating means, valve means and abdomen restriction means in a predetermined selected sequence and for the period of time desired.

4,397,307

CRANIAL EXTENSION HOLDER

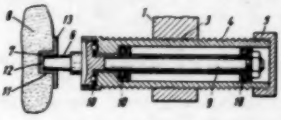
Arnold Keller, Kaihude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 181,380

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2936966

Int. Cl.³ A61H *1/02*

U.S. Cl. 128—76 R **11 Claims**



1. In a cranial extension holder for insertion within opposed bitemporal cranial bores and having a generally U-shaped bracket with outer ends to be positioned on opposite sides of the cranimum, connector means mounted on the bracket for connecting the bracket for traction, a single pair of opposed insertion pins having inner ends for insertion within opposed bitemporal cranial bores, and pin mounting means mounting the insertion pins on the outer ends of the bracket in opposed alignment for insertion of the inner ends thereof into opposed bitemporal cranial bores, the improvement wherein the pin mounting means comprises bearing means for mounting the pair of opposed insertion pins on the bracket in opposed coaxial alignment on a fixed common axis for being freely rotatable about said common axis relative to the bracket without axial displacement of the pins relative to the bracket to permit angular displacement of the bracket about said common axis without angular or axial displacement of the insertion pins within the bitemporal cranial bores.

4,397,308

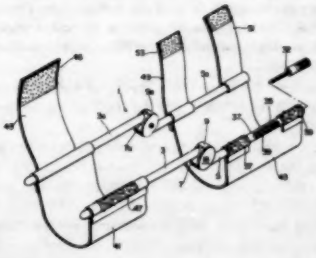
ADJUSTABLE SPLINT

George R. Hepburn, Severna Park, Md., assignor to Therapeutic Appliances, Inc., Baltimore, Md.

Filed Jul. 23, 1981, Ser. No. 286,161

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—88 **6 Claims**



1. An adjustable splint assembly comprising a lower strut, an upper strut pivotably connected to said lower strut, one of said struts having at one end thereof a pivotably mounted head

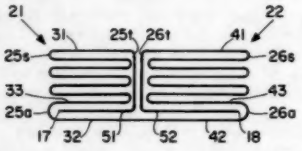
portion including a cam surface, the other of said struts comprising a tubular member having a longitudinal bore therein, adjustable biasing means located within the longitudinal bore in said tubular member and comprising a camming element located in said bore at one end of said tubular member and adapted to engage said cam surface of head portion of the said one strut, spring means located within said bore for exerting a pushing force on said camming member to bias said camming member into engagement with said cam surface of said head portion so as to apply a quantifiable force tending to align said upper and lower struts, an adjustment means located at the other end of said tubular member for enabling the pushing force exerted by said spring means on said camming element to be adjusted from the said other end of said tubular member, measuring means associated with said adjustment means for indicating the pushing force exerted by said spring means, and means for securing said splint assembly to a limb.

4,397,309

PROTECTIVE STACK COVER FLAPS FOR FOLDED DRAPES

Spears L. McAllester, Bartlett, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Feb. 20, 1981, Ser. No. 236,477
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—132 D **11 Claims**



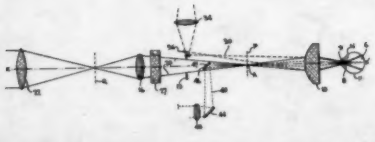
1. A surgical drape having a top surface and being folded to provide a stack of superposed drape panels, said stack comprising drape panels defined by a plurality of parallel folds, and a protective flap, comprising an edge of the drape, which extends from an upper drape panel of the stack around a part of one side of the stack which is below said upper drape panel and beneath a lower drape panel of the stack, whereby a portion of said top surface which would otherwise have been exposed along said part of the side of the stack is covered by said protective flap.

4,397,310

ANASTIGMATIC HIGH MAGNIFICATION, WIDE-ANGLE BINOCULAR INDIRECT ATTACHMENT FOR LASER PHOTOCOAGULATOR

Oleg Pomerantzeff, Brookline, Mass., assignor to The Government of the United States of America as represented by the Secretary of Department of Health and Human Services, Washington, D.C.

Filed Feb. 27, 1981, Ser. No. 239,015
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **14 Claims**



1. Apparatus for improving photocoagulation of the fundus area of a patient's eye by means of a laser beam introduced into the eye via the pupil of the eye, the eye having a crystalline lens with an optical nodal point, said apparatus including:

an observation system for viewing the patient's eye along an optical axis passing through said nodal point;

a laser beam delivery system for directing the laser beam into the pupil of said eye;

an ophthalmoscopic lens centered on said optical axis and constituting part of both said observation system and said laser beam delivery system;

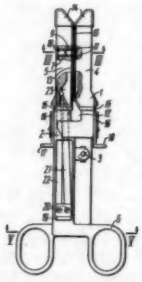
wherein said laser beam delivery system includes a scanning mirror rotatable about a fixed point on said optical axis to move an image of said laser beam along said fundus area, said mirror being positioned such that said fixed point and said nodal point are conjugate points of said ophthalmoscopic lens.

4,397,311

SURGICAL INSTRUMENT FOR STAPLE SUTURING OF HOLLOW ORGANS

Nikolai N. Kanshin; Vladimir M. Fedotov; Boris A. Smirnov, and Igor A. Guskov, all of Moscow, U.S.S.R., assignors to Vesesojuzny Nauchnoissledovatelsky I Ispytatelny Institut, U.S.S.R.

Filed Nov. 3, 1980, Ser. No. 203,345
Claims priority, application U.S.S.R., Dec. 20, 1979, 2856033
Int. Cl.³ A61B *17/04*
U.S. Cl. 128—305 **3 Claims**



1. In a surgical instrument for staple suturing hollow organs including a staple body and a supporting body hingedly connected thereto at a hinge joint, said bodies having outer surfaces and longitudinally extending jaws having respective compressing inner side surfaces adpated to be brought to mutual contiguous relationship with each other during a suturing procedure, said staple body having a staple magazine and ejector means for feeding the staples from said magazine during a suturing procedure in the region of the staple body jaw, said supporting body having die means for bending the staples fed from the magazine during the suturing procedure in the region of the supporting body jaw; the improvement comprising:

at least one of said staple and supporting bodies are formed to define a recess between said bodies in a bottom region of said side surface of at least one of said jaws proximate to said hinge joint, said recess defining an enlarged free space between said jaws when the same are in mutual contiguous relationship with each other during a suturing procedure and so that compression will not be applied to the regions of the organs to be sutured which are situated within said free space during a suturing procedure; a pair of spacers formed of springy elastic material adapted to be mounted and secured to respective jaws over the respective compression side surfaces thereof so as to be stitched up together with the organs to be sutured during a suturing procedure; and means for releasing said spacers from

said respective jaws after termination of the suturing procedure.

4,397,312

CLIP APPLYING FORCEPS

William P. Molko, Philadelphia, Pa., assignor to Dittmar & Penn Corp., Phila., Pa.

Filed Jun. 17, 1981, Ser. No. 274,468
Int. Cl.³ A61B 17/12, 17/28, 17/04
U.S. Cl. 128—325 1 Claim

1. Forceps for moving a clip into engagement with a blood vessel comprising

first and second arms pivotally connected at their distal ends and having handle means at their proximal ends,

said arms having clip deforming jaws extending from each arm distal to the pivotal connection,

a leaf spring pivotally connected to said first arm intermediate the arms of the spring,

the distal end of the spring being alignable with said first arm and when so aligned the proximal end is urged by the spring to bias said second arm away from said first arm,

slots in said first and second arms proximal to the pivotal connection therebetween which are engageable with the distal end of said spring when said spring is substantially aligned with said first arm whereby said jaws are properly spaced to engage an undeformed clip therebetween,

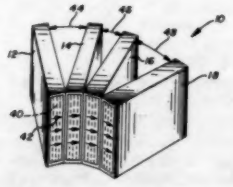
said slots being located such that said jaws are closeable to deform the clip when said spring is engaged in said slots.

4,397,313

MULTIPLE MICROWAVE APPLICATOR SYSTEM AND METHOD FOR MICROWAVE HYPERTHERMIA TREATMENT

Victor A. Vaguine, Dallas, Tex., assignor to Clini-Therm Corporation, Dallas, Tex.

Filed Aug. 3, 1981, Ser. No. 289,126
Int. Cl.³ A61N 5/02
U.S. Cl. 128—399 23 Claims



1. A multiple microwave applicator unit for use in a microwave hyperthermia treatment system including a source of microwave power, comprising:

a plurality of microwave waveguide applicators combined to form a microwave applicator unit;

means for microwave input power coupling said applicators to a source of microwave power;

means for selectively adding and removing individual applicators from among said plurality of applicators from coupling with said source of microwave power so as to incrementally increase or decrease the resultant treatment field size; and

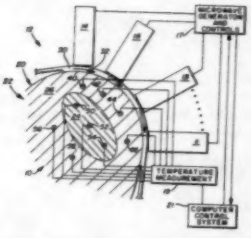
means for positioning the geometry of said applicators, whereby the heating pattern may be controlled in a treatment area by shaping the propagated electromagnetic field and said plurality of applicators may be configured to conform to the contour of the treatment surface area, said plurality of microwave applicators being operated in a transverse electric mode whereby the electric field generated by the applicators is generally parallel the contour of the surface treatment area to minimize heating of healthy surface tissue.

4,397,314

METHOD AND APPARATUS FOR CONTROLLING AND OPTIMIZING THE HEATING PATTERN FOR A HYPERTHERMIA SYSTEM

Victor A. Vaguine, Dallas, Tex., assignor to Clini-Therm Corporation, Dallas, Tex.

Filed Aug. 3, 1981, Ser. No. 289,127
Int. Cl.³ A61N 1/40
U.S. Cl. 128—399 10 Claims



1. In a microwave hyperthermia treatment system including a microwave power generator, a plurality of microwave applicators powered by the microwave power generator, and a power input control for each of the applicators to vary the power input to the applicators from the microwave power generator, wherein the improvement comprises:

multiple temperature sensors for actively monitoring the temperatures in both the tumor and the region of normal tissue subject to treatment, including means for generating a temperature control signal for each of said sensors;

a first means for generating a control signal to selected ones of the power input controls of the microwave applicators in response to said temperature control signal from said sensors for the tumor for maintaining the temperature within the tumor at a predetermined control temperature;

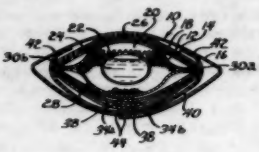
a second means for generating a control signal to selected ones of the power input controls to the microwave applicators in response to a temperature control signal from said sensors in a region of normal tissue indicating a temperature in excess of a threshold temperature; and

means for said second control signal to override said first control signal to decrease the power input to selected ones of said applicators, whereby the normal tissue is protected by keeping it below a predetermined threshold temperature while maintaining the temperature within the tumor at the temperature closest to the predetermined control temperature permitted by the power input to the microwave applicators.

4,397,315
DRESSING WITH TEMPERATURE PACK

Harish A. Patel, Crystal Lake, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Sep. 16, 1981, Ser. No. 302,917
Int. Cl.³ A61F 7/00
U.S. Cl. 128—403 10 Claims

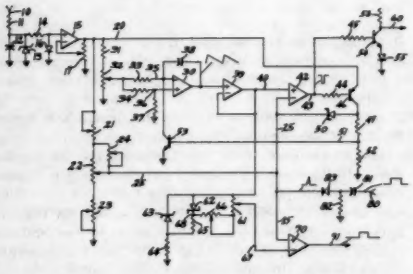


1. A dressing for the body of a patient, comprising:
an elongated pack to produce heat or cold, said pack having a front surface, a rear surface, and two opposed side edges, said pack comprising an outer closed envelope of fluid impervious material containing a first material, said outer envelope preventing passage of the first material therethrough, and an inner rupturable envelope of fluid impervious material containing a second material; said first and second materials producing heat or cold when contact is made between the two materials; and
a plurality of sheets of absorbent material covering the front surface of the pack and extending around both side edges of the pack to the rear surface of the pack.

4,397,316
RATE AND A-V DELAY GENERATOR FOR HEART PACEMAKER

Thomas C. Barthel, Becker, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 25,654, Mar. 30, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,306
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 14 Claims

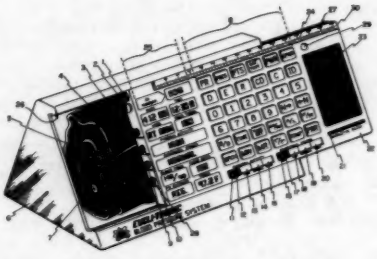


1. Apparatus for producing atrial and ventricular timing signals for a pacemaker with independent control of ventricular rate and atrial-ventricular delay, comprising:
means for generating first and second voltage signals, one of said voltage signals comprising a voltage ramp signal and the other of said voltage signals comprising a reference voltage;
first voltage comparison means connected to receive said first and second voltage signals and operative to produce a first output signal when said voltage ramp signal reaches a predetermined relationship with said reference voltage;
voltage offset means connected to receive one of said voltage signals and operative to produce an offset voltage signal which differs therefrom by an offset voltage;
second voltage comparison means connected to receive said voltage offset signal and the other of said voltage signals and operative to produce another output signal when said voltage offset signal and said other voltage signal reach a predetermined relationship, said output signal being spaced in time from said first output signal according to the amount of said offset voltage; and
means for adjusting the amount of said offset voltage, whereby the earlier and later output signals provide atrial and ventricular timing signals, respectively, and whereby the ventricular rate may be controlled by adjusting the relationship of said reference voltage and said voltage ramp signal, and the atrial-ventricular delay may be independently controlled by adjusting the amount of said offset voltage.

4,397,317
ELECTRONIC BLOOD PRESSURE AND PULSE RATE CALCULATOR WITH OPTIONAL TEMPERATURE INDICATOR, TIMER AND MEMORY

Antony-Euclid C. Villa-Real, 2512 Capistrano Ave., Las Vegas, Nev. 89121

Filed Apr. 17, 1980, Ser. No. 141,101
Int. Cl.³ A61B 5/02
U.S. Cl. 128—680 3 Claims



1. An electronic blood pressure and pulse rate measuring device for use on a subject by a user who can be said subject or another person and that can be used with battery power or ordinary available home and office current which comprises, in combination; an inflatable-deflatable circumferentially adaptable arm-cuff with detachable acoustical transducer means to detect the first appearance of the Korotkoff sounds and the disappearance of the Korotkoff sounds including the series of Korotkoff sounds occuring therebetween for measuring the systolic and diastolic blood pressure and pulse rate of the subject, a pressure sensing means for transforming the degree expressed in millimeters of mercury of the pressure of the cuff upon the subjected arm to correlate with both analog and digital readings indicative of the first appearance and the disappearance of the Korotkoff sounds produced by the semi-occluded artery and its gradual deocclusion process, a pressure threshold setting means which can electronically be programmed or set by the user at about the equivalence of 20 millimeters of mercury reading or higher above the anticipated highest systolic blood pressure reading of the subject, whereupon said programmed threshold reading upon having been exceeded by the arm cuff's compression pressure exerted thereabout the arm or limb of the subject, said pressure threshold setting means will automatically trigger or activate the electronic circuitry of the system to sense for and latch the systolic and the diastolic readings by a systolic enabling circuit and a diastolic enabling circuit, respectively and, within the time frame of the systolic and diastolic measurement, means for calculating arithmetically the pulse rate per minute of the subject based on the pulses and rate of the appearance of the Korotkoff sounds as picked up by the acoustical transducer means, a physical activity degree delineation means that enables the user to program the degree of physical activity of the

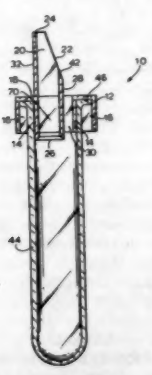
subject during the time and data of the blood pressure and pulse rate measurement, so that upon entry and storage of this valuable data in correlation with the subject's ID number and the date and time of blood pressure and pulse rate measurement, it is possible to retrieve or recall the the combinations of those data at a later date for comparative purposes, an emotional stress degree delineating means that enables the user to program the degree of emotional stress of the subject during the time and date of the blood pressure and pulse rate measurement, so that upon entry and storage of this valuable data in correlation with the subject's ID number and the data and time of blood pressure and pulse rate measurements, it is possible to retrieve or recall the combinations of these data at a later date for comparative purposes, means of recalling the desired combination data either singly or in multiples in forward sequential or rearward sequential order relevant to a pre-programmed rate of consecutive appearances of data display, important for use by user for comparative purposes, a means for calculating the regularity or irregularity of the pulse rate including means for entering and storing pulse rate regularity and irregularity data and retrieving of the same at a later date, light emitting means for visually establishing the range between the systolic blood pressure reading and the diastolic blood pressure reading by the appearance of a plurality of continuously latched light signals starting from the systolic blood pressure reading to the diastolic blood pressure reading as correlated to a linear gauge enabling the user the capability of a visual representation of the approximate range and disparity between the subject's systolic and diastolic readings, a means of programming the correct right or left arm location where the blood pressure is being taken, respectively during the blood pressure measurement, before and during entry of this data into memory together with the other data relevant to a particular subject so that upon future retrieval of the combination of this data, the user can be reminded from which arm the particular blood pressure was taken according to the particular time and date of measurement.

4,397,318

BLOOD COLLECTOR FOR MICROCOLLECTION CONTAINER

James A. Burns, Elizabeth, N.J., assignor to Becton Dickinson and Company, Paramus, N.J.

Filed Aug. 10, 1981, Ser. No. 291,529
Int. Cl.³ A61B 5/14
U.S. Cl. 128—763 **16 Claims**



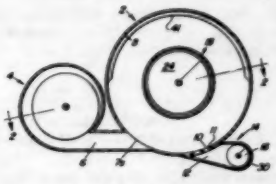
1. Blood collection apparatus comprising
(a) a tube-shaped microcollection container;
(b) said microcollection container having a closed end and an open end;
(c) a cap for closing said open end; the improvement characterized by said cap including
(1) a semi-tubular collector body in said cap having a blood flow passage therethrough;
(2) said body extending from a puncture wound engaging front end surface to a blood discharge rear end surface;
(3) means on said cap for attaching said cap to said container open end;
(4) vent means in said cap for air displacement therethrough;
(5) a vane in said cap dividing said vent means from said blood flow passage;
(6) said vane defining the upper wall of said passage;
(7) said vane extending from said rear end surface to a point spaced from said front end surface to form semi-tubular scoop means; and
(8) said front end surface being the front end of said scoop means and having a large circumferential extent.
9. The apparatus of claim 1, further characterized by
(a) said container is comprised of a thermoplastic modified with a cationic siloxane wetting agent.

4,397,319

CLEANING DEVICE FOR HARVESTING MACHINES

Ernst Schuhmacher, Homburg-Einod, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Mar. 31, 1981, Ser. No. 249,582
Int. Cl.³ A01F 12/48, 7/00
U.S. Cl. 130—27 HF **23 Claims**



1. In a harvesting machine, a crop material cleaning device for processing threshed material comprising:
a fixed cleaning drum having an upstream threshed material inlet and a downstream outlet and a generally cylindrical wall including an air inlet including an air inlet portion adjacent and generally downstream of the threshed material inlet and a sieve-like outlet;
a feeder conveyor in a crop material delivery relationship with the upstream inlet for feeding threshed material into the drum;
a blower assembly connected to the air inlet for delivering a flow of air into the drum in a direction substantially tangential to the wall of the drum adjacent the air inlet for engaging the threshed material and propelling it circumferentially within the drum; and
means urging the crop material downstream so that the harvested crops are separated from impurities and discharged through the sieve-like outlet and the impurities are discharged through the downstream outlet.

4,397,320

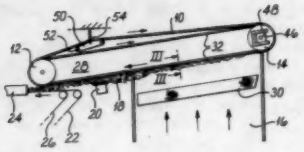
CIGARETTE MAKING MACHINE

Francis A. M. Labbe, Neuilly-sur-Seine, France, assignor to Molins Limited, London, England

Filed Sep. 22, 1981, Ser. No. 304,609
Claims priority, application United Kingdom, Sep. 24, 1980, 8030835
Int. Cl.³ A24C 5/14, 5/18
U.S. Cl. 131—84 R **7 Claims**

1. A cigarette making machine including an air-pervious tape which is arranged to carry a cigarette filler stream, with the aid of suction, towards a rod-forming device in which the filler stream is enclosed in a continuous wrapper web to form

a continuous cigarette rod, the edges of the operative run of the tape being supported by an endless moving cable arranged to form two parallel lower runs which lie above and extend



along edge portions of the operative lower run of the tape in contact therewith, and upper runs which cross over beneath the non-operative upper run of the tape.

4,397,321
SMOKING PREPARATIONS

Dagobert E. Stuetz, Watchung, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,898
Int. Cl.³ A24B *15/28, 15/30, 15/42*
U.S. Cl. 131—334 **14 Claims**

14. A method of reducing the carbon monoxide content of smoke delivered by a smoking preparation which comprises uniformly dispersing in the combustible filler of the smoking preparation prior to the smoking process a catalyst composition comprising (a) the water-soluble fraction of ash, and (b) at least one component selected from transition metal compounds.

4,397,322
NON-SUDSING SHAMPOO AND CONDITIONER COMPOSITION

Joseph Arbaczawski, 1752 Colonial South Dr., Conyers, Ga. 30208

Filed Apr. 28, 1980, Ser. No. 144,779
Int. Cl.³ A45D *7/00*
U.S. Cl. 132—7 **4 Claims**

1. A process of cleaning the hair of a person in a pool, spa or hot tub containing water and removing the resulting material from the water comprising:

(a) applying to the hair of a person disposed in a water pool, spa or hot tub in which water is recirculated, an organic water soluble cationic polyelectrolyte solution having a viscosity of above about 100 cps for collecting dirt and oil from said hair in said solution;

(b) thereafter, rinsing said hair in the water of said pool, spa or tub; and

(c) then separating from said water, a portion of said polyelectrolyte and dirt and oil collected as a flocculent from said water.

4,397,323
FRAME

James B. Berry, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, c/o James B. Berry, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

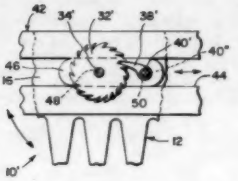
Filed Aug. 20, 1982, Ser. No. 410,133
Int. Cl.³ A45D *24/00*
U.S. Cl. 132—11 R **3 Claims**

1. A hair frame which comprises:

(a) a comb having a centrally located aperture in back portion;

(b) a frame having a centrally located aperture and another aperture adjacent to one end thereof;

(c) a ratchet wheel having a shaft that passes through said centrally located aperture in said frame and centrally located aperture in said back portion of said comb so that a head can be formed on free end of said shaft by pressing, affixing said ratchet wheel to said comb allowing said comb and said ratchet wheel to rotate together; and

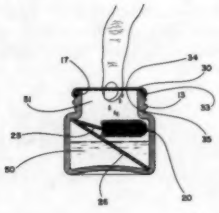


(d) a spring loaded pawl having a shaft that mates with said other aperture adjacent to one end of said frame, allowing said pawl to move and engage with said ratchet wheel so that said comb can be adjusted to and held in any position.

4,397,324
MANICURING DEVICE

Robert W. Thomas, Jr., 100 E. Kentuckey Ave., Apt. K-2, Deland, Fla. 32720

Filed Oct. 22, 1981, Ser. No. 314,026
Int. Cl.³ A45D *29/18*
U.S. Cl. 132—73.5 **8 Claims**



1. An improved container for liquid nail polish remover comprising:

a generally rectangular receptacle having a large circular opening formed by a raised threaded neck portion,

a brush element having support means disposed in the interior of said receptacle,

a resilient apertured primary closure means secured to said raised neck portion; wherein,

the primary closure comprises a resilient diaphragm having an elongated slit disposed at its midpoint, and a beaded periphery which is dimensioned to be received within a recess in said raised neck portion; and the resilient diaphragm is further provided with abrasive particles disposed on its exterior surface adjacent the elongated slit.

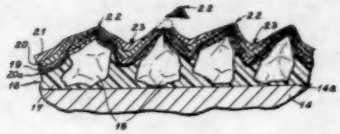
4,397,325
ABRASIVE ARTICLE

Harry P. Van Roeyen, Skokie, Ill., assignor to Barristo, Ltd., Chicago, Ill.

Division of Ser. No. 177,456, Aug. 12, 1980, Pat. No. 4,369,099. This application May 6, 1982, Ser. No. 375,454
Int. Cl.³ A45D *29/04*
U.S. Cl. 132—76.4 **20 Claims**

1. An abrasive device comprising a structural base, a coating

of abrasive particle containing resin material on the base, and a sheath of plated metal overlying the resin coating and having



thin frangible portions covering the peaks of the particles which are broken off during abrasion to expose the particles.

4,397,326

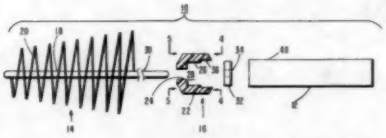
ROTATABLE MASCARA APPLICATOR

Val A. Formica, 5 Doherty Dr., Middletown, N.J. 07748

Filed Mar. 22, 1982, Ser. No. 360,740

Int. Cl.³ A45D *40/30*

U.S. Cl. 132—88.5 **7 Claims**



1. A rotary mascara applicator comprising, in combination, a handle member;

a mascara brush including a shaft and a plurality of bristles extending from a portion of said shaft;

a housing a portion of which is connected to said handle member, internal walls of said housing defining a first bore slightly larger in cross-section than said shaft and a second bore defining an internal area connecting with but larger than said first bore, an end of said shaft of said brush passing through said first bore and terminating in said internal area; and

rotation permitting means fixedly connected to said end of said shaft and rotatably disposed in said internal area of said housing, the inner walls of said housing serving to retain said rotation permitting means in said internal area, whereby brushing eyelashes with said brush causes said brush including said shaft and said rotation permitting means connected thereto to rotate 360° in either direction.

4,397,327

TOOTHPICK HOLDER

Joseph Hadary, 5405 Linden Ct., Bethesda, Md. 20014

Filed Nov. 14, 1980, Ser. No. 206,710

Int. Cl.³ A61C *15/00*

U.S. Cl. 132—89 **8 Claims**

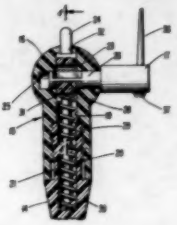
1. A toothpick holder for holding a toothpick in any one of a plurality of positively latched adjusted positions, comprising:

an elongate handle having an enlarged base on one end thereof and a head member on the other end;

said head member having a transverse bore therein;

an elongate toothpick retainer projecting from the bore in the head member with its axis extending in a direction substantially perpendicular to the axis of the handle and having a transverse opening therein for snugly engaging a toothpick at spaced locations on the toothpick and holding the toothpick with the axis of the toothpick at substantially a right angle to the axis of the retainer, the opening in the retainer being disposed in offset, spaced relation to the axis of the handle whereby the toothpick is held in spaced, offset relation to the handle;

latching means for cooperative engagement with complemental latching means on the retainer to releasably latch the retainer in any one of several adjusted positions of rotation about the retainer axis, to thereby latch the toothpick in any one of several adjusted orientations relative to the handle; and



actuator means to selectively release the latching means.

4,397,328

CLEANING APPARATUS OF TUBULAR MATERIALS FOR USE IN PICKLING FACILITIES FOR THE SAME

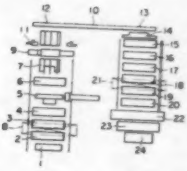
Yoshiro Tanaka; Hayato Moroi; Yukihiko Kumatsu; Kazuo Akagi; Ryujiro Shitamatsu, all of Shimonoseki, and Tadashi Nishimura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 5, 1981, Ser. No. 308,823

Claims priority, application Japan, Aug. 12, 1981, 56-120158[U]

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—76 **8 Claims**



1. A cleaning apparatus for tubular members for use in pickling facilities for the same, said cleaning apparatus being adapted to clean the tubular members which have been pickled by sucessively immersing the tubular members into a plurality of tanks each filled with a cleaning fluid, said apparatus comprising:

a travelling crane for conveying and loading said tubular members from one tank to another;

a pair of endless wrapping connectors spacedly and circulatably provided in at least one tank below the level of said cleaning fluid for conveying said tubular members while supporting said tubular members below the level of said cleaning fluid; and

a plurality of feed claws provided with a predetermined interval therebetween on each of said endless wrapping connectors along the length of the same so as to prevent said tubular members from contacting one another.

4,397,329

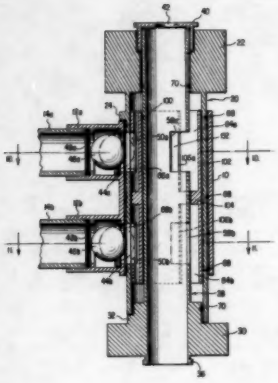
MIXING VALVE

Dennis Marshall, 435 W. Second St., Apt. 6, Lexington, Ky. 40507

Continuation-in-part of Ser. No. 144,825, Apr. 29, 1980, Pat. No. 4,306,582. This application Nov. 24, 1981, Ser. No. 324,660

Int. Cl.³ F16K 11/22

U.S. Cl. 137—100 7 Claims



1. A mixing valve for mixing fluids emanating from first and second sources, comprising

a cylindrical housing having first and second axially aligned spaced inlet connectors for coupling to said first and second sources respectively, each of said first and second inlet connectors being provided with fluid blocking means for impeding the flow of fluid therethrough;

a rotatable pressure selection element positioned within said housing, said pressure selection element having first and second axially spaced ports substantially aligned with said first and second inlet members, rotation of said pressure selection element displacing said fluid blocking means to permit fluid from said first and second sources to enter the first and second ports of said pressure selection element;

an axially translatable pressure equalizing element positioned within said pressure selection element, said pressure equalizing element comprising inner and outer concentric radially spaced coaxial cylinders and a centrally located spacer interposed between said cylinders, said inner cylinder having first and second elongated ports extending from said spacer to the ends of said inner cylinder and said outer cylinder having first and second ports for controlling the flow of water from the first and second ports of said pressure selector element, the first and second ports in said inner cylinder being angularly displaced from the first and second ports of said pressure selection element; a rotatable temperature selection element positioned within said pressure equalizing element and having first and second axially spaced ports, said first and second ports being angularly displaced with respect to each other and to the first and second ports respectively in the inner cylinder of said pressure equalizing element; and

fluid discharge means coupled to said temperature selection element, the fluid emanating from said discharge means having a volume per unit time determined by the angular displacement of said pressure selection element and a temperature determined by the angular displacement of said temperature selection element.

4,397,330

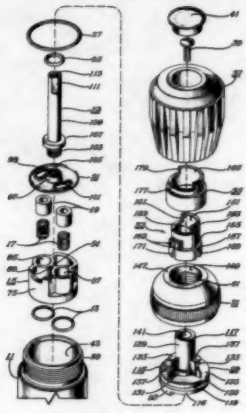
MIXING VALVE FOR BACK TO BACK INSTALLATION

Dennis J. Hayman, Bloomfield Hills, Mich., assignor to United States Brass Corporation, Plano, Tex.

Filed Aug. 19, 1981, Ser. No. 294,366

Int. Cl.³ F16K 11/06

U.S. Cl. 137—270 2 Claims



1. A single handle mixing valve comprising:

a. a valve body having a bore forming a cavity with a sidewall, a bottom wall and an open top; said valve body further having hot and cold water inlet openings communicating with hot and cold water inlets in said cavity bottom wall;

b. bonnet means removably fixed to said valve body and forming a partial outer end closure for said valve body cavity at its open top;

c. cap means having a central bore, a first portion that is disposed interiorly of said bonnet means and a second portion that is disposed exteriorly of said bonnet means, with said cap means being retained by coaction of said first portion and said bonnet means;

d. a water mixing chamber within said valve body and at least partially defined by the inward end surfaces of said cap first portion;

e. inlet seals communicating with said inlets in said cavity bottom wall and opening to said mixing chamber;

f. a control disc having a surface coacting with said inlet seals and having first and second oppositely disposed control openings;

g. a stop bushing matingly received by said cap means second portion;

h. a control stem driving said control disc, with said control stem being received by and protruding beyond the outer end of said cap central bore and said stop bushing;

i. a handle received by the outer end portion of said control stem and removably retained thereon, with said handle having a stop means disposed adjacent said stop bushing;

j. valve open and valve closed stop surfaces incorporated in said stop bushing for engagement with said handle stop means;

k. means for establishing and maintaining a predetermined fixed relationship between said handle stop means and said control disc openings;

l. means for establishing and maintaining a predetermined fixed relationship between said cap means, said inlet seals and said valve body;

m. means for selectively establishing and maintaining either of a first predetermined fixed relationship between said stop bushing and said cap means such that said control disc control openings are properly oriented and move in

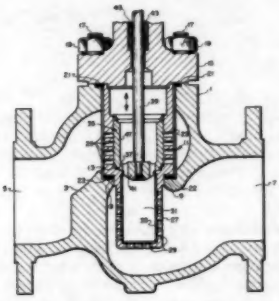
the proper sequence from the valve closed to the valve open positions for installation of a first valve unit in a back to back installation, or a second predetermined fixed relationship between said stop bushing and said cap means such that said control disc openings are properly oriented and move in the proper sequence from the valve closed to the valve open positions for installation of the second valve unit in a back to back installation.

4,397,331

FLUID FLOW CONTROL VALVE WITH MAXIMIZED NOISE REDUCTION

Lewis A. Medlar, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 29, 1978, Ser. No. 947,265
Int. Cl.³ F16K *47/02, 47/14*
U.S. Cl. 137—375 **3 Claims**



1. In a fluid flow control valve having a fluid path, means for controlling the effective area of said path, and a perforated member having its perforations located in fluid pressure dropping relationship in said path, the improvement for minimizing the noise produced by the passage of fluid through said perforations, comprising

a perforated wall located in cooperative relation to said perforated member to form a chamber on the downstream side of said member perforations, the wall perforations in said wall being of a size to establish a maximized noise cutoff frequency to cause that portion of said noise having frequencies below said cutoff frequency to be reflected back into said chamber and to follow a noise path through the solid parts of said wall, thereby to maximize the separation of the path of said noise from the path of the fluid through said wall perforations, and

a noise absorbing lining located on the interior surface of said wall within said chamber to absorb said reflected noise along said noise path and thus minimize the transmission of said noise downstream of said chamber.

4,397,332

STANDPIPE CAP LOCKING MEANS

Louis J. Sample, 42-49 Colden St., No. 7P, Flushing, N.Y.

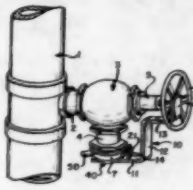
Filed Jun. 26, 1981, Ser. No. 277,967
Int. Cl.³ F16K *35/02*
U.S. Cl. 137—385 **12 Claims**

1. In a system for controlling the flow of a fluid, said system including an outlet port for said fluid and a valve to control the flow to said outlet port, said outlet port being covered by a threaded cap, said cap having a face portion and a depending skirt, the improvement which comprises means for preventing unauthorized removal of said cap including:

a. a headed pin mounted, essentially, in the center of said face portion of said cap;

b. a slotted bar overlying said cap, said headed pin lying within the slot in said bar, the head of said pin preventing removal of said bar from said cap;

c. transverse slots formed in said bar, one transverse slot lying on each side of the headed pin slot in said bar, said transverse slots being aligned and so positioned that when said bar is moved to one extremity relative to said headed pin, said headed pin abutting an end of the slot in said bar, the transverse slots are aligned diametrically opposite the part of said pin adjoining the end of said slot;



d. means extending from said bar, essentially parallel with said skirt of the said cap;

e. at least one extension formed on said skirt to abut said means extending from said bar when said bar is in an extreme position relative to said pin;

f. means to prevent rotation of said bar; and

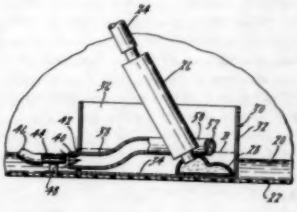
g. means for insertion through the transverse slots formed in said bar to abut the part of said pin diametrically opposite the part of said pin adjoining the end of said slot, so as to prevent movement of said bar.

4,397,333

FUEL COLLECTOR ASSEMBLY

Joseph Liba, East Detroit, and Michael Rafferty, Madison Heights, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 4, 1981, Ser. No. 299,373
Int. Cl.³ F17B *1/00*
U.S. Cl. 137—574 **9 Claims**



1. In a vehicle fuel tank which is generally characterized by a bottom wall of substantial area and a relatively large ratio of liquid volume per linear fuel depth so that fuel tends to move from a central area of the tank due to accelerating forces of the associated vehicle particularly when the fuel level is relatively low, an improved fuel intake and collecting arrangement comprising:

fuel collector means supported by the bottom of the fuel tank including a continuous wall of substantial height with respect to the depth of fuel at low fuel levels to define a small volume interior chamber for fuel,

a fuel inlet supply line for the vehicle engine with an open inlet end extending into the fuel collector means,

means for passing fuel from the fuel tank into the chamber of the collector means so as to build up a volume therein with substantial depth including a conduit extending through the wall of the collector in a sealing manner having an open discharge end portion thereof within the interior of the collector and an intake end portion without,

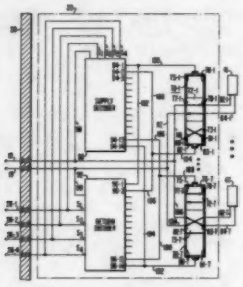
the open intake portion being located close to the bottom wall of the fuel tank, the open discharge portion being located upwardly from the bottom wall so that fuel entering the collector therefrom stands at an increased level with respect to the intake end portion and is prevented from falling below a level corresponding to the height of the outlet end due to backflow.

4,397,334

FLUID CONTROL SYSTEM

David M. Harrell, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1981, Ser. No. 270,473
Int. Cl.³ F15B *13/02*
U.S. Cl. 137—624.11 **13 Claims**



1. A fluid control system for controlling the operation of a plurality of fluid activated devices, comprising:

(A) a source of activating fluid including a relatively high pressure supply portion and a relatively low pressure return portion;

(B) a plurality of fluid control lines;

(C) means including control valve means for impressing predetermined signal pressure patterns of relatively high and low pressures in said control lines in accordance with the selective activation of said control valve means;

(D) means including a supply decoding section responsive to said signal pressure patterns for connecting said high pressure supply section of said source of activating fluid to selected ones of said fluid activated devices; and

(E) means including a return decoder section responsive to said signal pressure patterns for connecting said selected ones of said fluid activated devices to said low pressure return section of said source of activating fluid.

4,397,335

ROTARY VALVE ESPECIALLY USEFUL IN A MEDICAL SYSTEM INCLUDING A FLOW-DIRECTED VENOUS CATHETER

Dennis D. Doblar, 11520 Grandview Ave., Silver Spring, Md. 20902, and John C. Hinkle, 808 Misty Glen La., Dallas, Tex. 75232

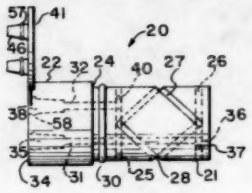
Filed May 26, 1981, Ser. No. 267,335
Int. Cl.³ F16K *11/085*; A61M *5/00*
U.S. Cl. 137—625.19 **31 Claims**

1. A rotary valve comprising

a housing having a bore extending partly therethrough that is bounded by a surface of revolution that is defined by the side wall of the housing, said housing having a plurality of ports opening into its bore through the side wall of the housing, said ports being disposed in cooperating pairs, each pair being spaced from each other pair, and

a valve plug movably mounted in said bore for rotary movement therein, and having at least one channel in the surface thereof that confronts said surface of revolution of the housing, said channel being disposed, upon proper orientation of the plug in the housing by relative rotation thereof, each to be in communication with one port of one pair of ports and another port from another pair of ports, respectively, to place said last-named ports in communication with each other,

said valve plug also being formed with additional passageways therein that each extend partially axially through the plug and partially transversely therethrough respectively, one said transversely extending passageway portion being disposed in axial alignment with one of said pairs of housing ports, and one other said transversely extending pas-



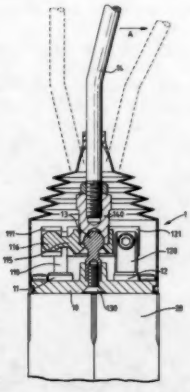
sageway portion being disposed in axial alignment with one other of said pairs of housing ports, said transversely-extending passageway portions being positioned respectively so that upon proper orientation of the plug in the housing by relative rotation thereof, a single one of said transversely-extending passageway portions can be placed in communication with one of said housing ports in a first of said pairs of ports, and the other of said transversely extending passsageway portions and the remaining housing ports are either sealed closed by the surface of the plug or the said other of said transversely extending passageway portions is placed in communication with one of said housiing ports in a second of said pairs of ports.

4,397,336

CONTROL DEVICE FOR HYDRAULIC SPOOL VALVES

Philip D. Godfrey, 47 Dudley Rd., Grantham, Lincolnshire, England

Filed Jan. 22, 1981, Ser. No. 227,211
Claims priority, application United Kingdom, Jan. 24, 1980, 8002438
Int. Cl.³ F16K *31/44*
U.S. Cl. 137—636.2 **5 Claims**



1. A control device for hydraulic spool valves comprising a control lever mounted on a spherical pivot, an actuating mem-

ber fixed to said lever and lying in a plane and passing through the center of the spherical pivot of said pivot, and said actuating lever having a first arm extending along a first axis in said plane and having a second arm extending along a second axis in said plane at right-angles to said first axis, said first and second arms surrounding the spherical pivot and at least a portion of said control lever first and second elongate followers for connecting said first and second arms to respective first and second spool valves, one end of said first follower being mounted at the free end of said first arm and extending in said plane in a direction parallel to said second arm, the other end of said first follower being connectible to the first spool valve to operate the first spool valve when the control lever is pivotted about said second axis, one end of said second follower being mounted at the free end of said second arm and extending in said plane in a direction parallel to said first arm, the other end of said second follower being connectible to the second spool valve to operate the second spool valve when the control lever is pivotted about said first axis.

4,397,337

TUBULAR CASING SUITABLE FOR FOODSTUFFS AND PROCESS FOR ITS MANUFACTURE

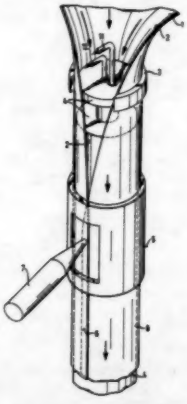
Herbert Porrmann, Niedernhausen; Peter Heidel, Wiesbaden, and Karl Stenger, Ruedesheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 324,967

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108795

Int. Cl.³ F16L *11/00*; A22C *13/00*

U.S. Cl. 138—118.1 **15 Claims**



1. A tubular casing comprising a fiber-reinforced regenerated cellulose wherein the fiber-reinforcement comprises:

a fiber web comprising first and second edge regions, parallel to the longitudinal axis, which are overlapped and bonded to form a tube;

an impregnation layer of a thermoplastic synthetic resin applied on the entire inwardly-facing surface of said fiber-reinforcement before overlapping said edge regions, and present in a weight per unit area of less than about 50 g/m^2, said impregnation layer comprising the bond for said edge regions; and

a regenerated cellulose surface on the outer surface of said fiber-reinforcement applied after overlapping and bonding said edge regions.

4,397,338

HEAT RESISTANT PROTECTIVE COATING

Glenn R. Cunningham, Pittsburgh, Pa., assignor to Cunningham & Thompson, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1981, Ser. No. 317,181

Int. Cl.³ F16L *9/14*; C04B *31/00*

U.S. Cl. 138—145 **13 Claims**

1. A foamable coating composition comprising:

14 to 21 percent by weight alkali metal silicate;

20 to 35 percent by weight magnesium silicate; and

the balance water.

10. A pipe coated with a composition comprising:

14 to 21 parts by weight alkali metal silicate;

20 to 35 parts by weight magnesium silicate; and

the balance water.

4,397,339

DEVICE FOR REMOVING CONTAMINATING MATTER IN JACQUARD WEAVING MACHINES

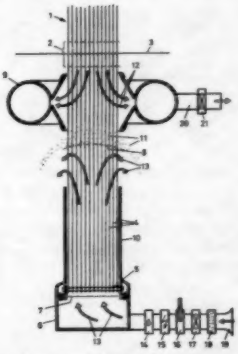
Ernst Müller, Wädenswil, Switzerland, assignor to Gessner AG, Wädenswil, Switzerland

Filed Aug. 14, 1981, Ser. No. 293,406

Claims priority, application Switzerland, Aug. 22, 1980, 6361/80

Int. Cl.³ D03D *00/00*

U.S. Cl. 139—1 C **7 Claims**



1. Device for the removal of dust, air-borne fibers, waste fibers and other contaminating matter in a Jacquard weaving machine having a warp, wherein the device comprises a generally vertically extending elastic weaving harness means extending downwardly from the warp, means located at the lower end of the harness means for directing a flow of air upwardly over said harness means, and means for controlling the flow of air through said means for directing a flow of air upwardly for establishing an air cushion having an upper level spaced below the warp for keeping contaminating matter out of the lower part of said harness means.

4,397,340

WEFT DETAINING DEVICE FOR SHUTTLELESS LOOM

Hidetsugu Umezawa, Higashiyamato; Takashi Ogasawara, Tokyo, and Takao Honya, Koganei, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 27, 1981, Ser. No. 315,516

Claims priority, application Japan, Nov. 12, 1980, 55-158137

Int. Cl.³ D03D *47/36*

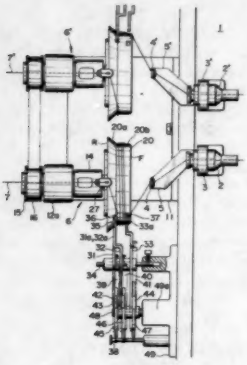
U.S. Cl. 139—452 **18 Claims**

1. A weft detaining device of a shuttleless loom of the type wherein first and second times weft pickings take place in sequential first and second operational cycles, respectively, of the loom, and weft picking is disabled in succeeding third and

fourth operational cycles of the loom, said weft detaining device comprising:

a drum on which a weft yarn is wound prior to its introduction to a weft inserting means, said drum being formed with a frustoconical section tapered toward the weft inserting means side, and a cylindrical section integral with said frustoconical section and located nearer to said weft inserting means than to said frustoconical section, the weft yarn from weft supply means being introduced through said drum to said weft inserting means;

a first catching member for catching the weft yarn on said drum in the vicinity of the border between said frustoconical and cylindrical sections for at least a period of weft pickings, in timed relation to the operational cycle of the loom;



a second catching member for catching the weft yarn on said drum for at least a period of the first time weft picking and releasing its catching action to the weft yarn for at least a period of the second time weft picking, in timed relation to the loom operational cycle, the weft yarn of a predetermined length required for each weft picking being detained on said drum between said first and second catching members; and

a third catching member for catching the weft yarn on said cylindrical section for at least a period of the third and fourth loom operational cycles where the detaining of the weft yarn for the succeeding weft pickings is completed, the weft yarn of the predetermined length being detained on said drum between said second and third catching members.

4,397,341

METHOD AND APPARATUS FOR STRAIGHTENING AN ARRAY OF TERMINAL PINS

William C. Kent, Garland, Tex., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,673
Int. Cl.³ B21F *1/02*
U.S. Cl. 140—147 **20 Claims**

1. A method of straightening a coordinate array of pins, which comprises:

initially bending alternate rows of said pins in opposite directions beyond elastic limits; and then

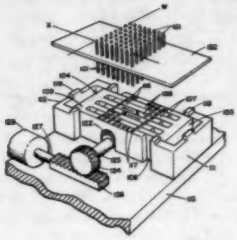
bending the alternate rows of pins in directions that are opposite to said initial directions beyond elastic limits.

10. A pin straightening apparatus, which comprises:

means for supporting a device with an array of pins projecting in common directions;

first means having a plurality of holes for receiving one half of the pins;

second means having a plurality of holes for receiving the remaining one half of the pins; and



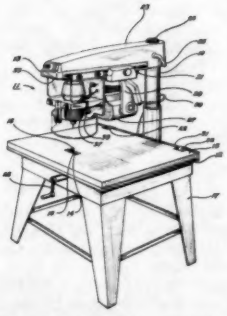
means for imparting relative motion between said first and second pin receiving means to bend one half of the pins in a first direction while simultaneously bending the remaining half of the pins in an opposite direction.

4,397,342

PIN-ROUTER MOUNTING DEVICE AND METHOD

Joe E. North, 2210 Delker Dr., San Angelo, Tex. 76901

Filed Jul. 29, 1981, Ser. No. 288,043
Int. Cl.³ B27G *19/00*; B27C *9/00*
U.S. Cl. 144—1 F **5 Claims**



1. A pin-router mounting device for use with a radial table saw of the type having a flat table, a vertical post fixed to one edge of said table, a vertically adjustable horizontal beam extending at a right angle to said post over said table and being movably secured to said post for selective vertical movement, and a radial saw motor secured to said beam and having a saw motor shaft, comprising:

a housing having an opening adapted to receive said radial saw motor shaft;

locking-means for engaging said housing on said motor shaft;

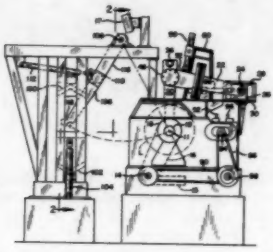
mounting means on said housing for attachment to said horizontal beam to prevent pivotal movement of said housing about said motor shaft; and

adjustable support means for removably securing said pin-router in said housing so that said pin-router longitudinal axis is normal to the plane of said table.

4,397,343
LOG SCANNING IN VENEER LATHE TO DETERMINE OPTIMUM YIELD AXIS

Fred W. Fields, Painesville, Ohio, assignor to The Coe Manufacturing Co., Painesville, Ohio

Filed Aug. 31, 1981, Ser. No. 298,183
Int. Cl.³ B27L *5/02*
U.S. Cl. 144—209 A **21 Claims**



1. Veneer lathe log scanning and positioning apparatus, comprising:

lathe spindle means for engaging the opposite ends of a log and for rotating said log about a spindle axis;

lathe knife means for peeling a sheet of wood veneer from said log as it is rotated by said spindle means about said spindle axis when said knife means is moved into engagement with the side of said log;

scanning means for scanning said log with electromagnetic radiation as said log is rotated by said spindle means about said spindle axis to determine the optimum yield axis of said log for the optimum production of veneer;

positioning means for engaging said log after scanning and for adjusting the position of said log after disengaging the spindle means to an aligned position where its optimum yield axis is aligned with the spindle axis;

control means for causing said spindle means to engage said log prior to and during scanning, for causing said spindle means to disengage from said log after it is engaged by said positioning means, and for causing said spindle means to engage said log in said aligned position;

and carriage means for moving said knife means into engagement with the side of said log in said aligned position.

4,397,344
TREAD FOR HEAVY-DUTY RADIAL TIRES

Rene Goergen, Colmar-Berg, and Guy J. Kind, Luxembourg, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

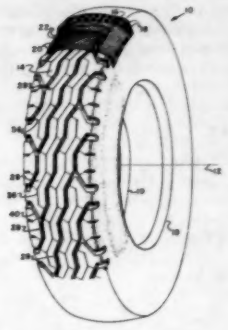
Continuation-in-part of Ser. No. 268,316, May 29, 1981, abandoned. This application Apr. 19, 1982, Ser. No. 369,381
Int. Cl.³ B60C *11/06*
U.S. Cl. 152—209 R **10 Claims**

1. A radial tire having a rotational axis and a tread, with first and second axially outer edges, said tread having a tread width equal to the distance between said first and second axially outer edges as measured parallel to said axis, said tread extending circumferentially about said axis, said tread comprising:

(a) a plurality of parallel ribs extending substantially uninterrupted between said first and second axially outer edges, said ribs being inclined to the mid-circumferential plane of said tire and extending over an arc of said tread which is equal to at least about 45 degrees and not more than about 180 degrees;

(b) a plurality of long, wide grooves extending between said first and second axially outer edges to separate and define said ribs, each said long, wide groove extending alternately in a direction oblique to the circumferential direction of said tire to provide good traction, and then in a direction substantially parallel to the circumferential direction of said tire a distance equal to between one-half and twice the distance said wide groove extends in the oblique direction to provide good tracking; and

(c) a plurality of short, wide grooves located in the portions of said ribs adjacent to said axially outer edges of said tread,

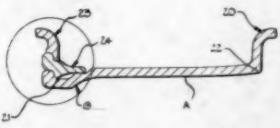


one short, wide groove being located between each adjacent pair of long, wide grooves at said first and second axially outer edges, each said short, wide groove being connected through a transverse groove with a short, wide groove located in the portion of a rib adjacent to the opposite axially outer edge of said tread to aid in water evacuation.

4,397,345
MANUFACTURE OF RIMS FOR THE WHEELS OF ROAD VEHICLES

Krishnaswamy Ramaratnam, and Kuzhumani M. Natarajan, both of Madras, India, assignors to Wheels India Ltd., India

Filed Mar. 2, 1979, Ser. No. 16,833
Int. Cl.³ B21K *1/38*; B60B *25/18*
U.S. Cl. 152—406 **14 Claims**



1. A method for the manufacture from low carbon steel strip or plate of rims for the wheels of both commercial load carrying and passenger service vehicles, each rim being composed of a base portion having a gutter for receiving a split lockring extending around one end and a fixed tyre bead retaining flange round the other, the method comprising bending a steel strip of substantially uniform predetermined thickness into the form of a circle and butt welding the contiguous axial edges to form a cylinder, cold working the cylinder in order to conform the diameter and dimensions thereof to subsequent operational requirements and simultaneously to flare one end of the cylinder to form the rim gutter, heating the flared gutter portion and subjecting the heated portion to compressive load in order to form a radially extending wall of the gutter and to increase the thickness of the said radially extending wall by as much as 50% and of the radial corner of the gutter by as much as 90% over the initial thickness of the strip, further heating the radially extending wall of the gutter and subjecting it to additional compressive load in order to increase the thickness of the entire gutter portion composed of said radially extending wall, gutter base and radial gutter corner, said increase in thickness in respect of the gutter base being as much as 50% and in

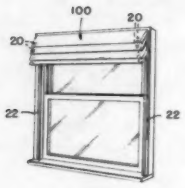
respect of the radial gutter corner from 50% to 90% over the initial thickness of the strip, cold working the gutter end of the semi-formed rim in order to form the profile of the gutter, cold working also the opposite end of the rim in order to flare at least a portion thereof for formation of the tyre bead retaining flange, heating said flared flange portion and finally subjecting the flared tyre bead retaining flange portion to compressive load in order to form the profile to the tyre bead retaining flange, said compressive loading increasing the thickness of the strip at or near the radial corner of the flange by as much as 50% over the initial thickness of the strip.

4,397,346

INSULATED WINDOW SHADE

James F. Chumbley; Michael W. Corke, both of King County, and Jo Yount, Jefferson County, all of Wash., assignors to Warm Window, Inc., Seattle, Wash.

Filed Jun. 1, 1981, Ser. No. 268,722
Int. Cl.³ E06B 3/94
U.S. Cl. 160—84 R **16 Claims**



1. A five-layer window shade fabric forming the hanging for an insulating window shade to improve the insulation of a pane of glass in a window of a building, comprising:

(a) a moisture-, light- and mildew-resistant exterior fabric to front the pane of glass;

(b) an integral insulation layer of lightweight, needle-punched fiber insulation adjacent the exterior layer;

(c) a vapor barrier adjacent the insulation layer to reduce condensation on the glass and to trap a layer of air between the barrier and the window, the barrier being selected from the group of films consisting of films of polyethylene and vinyl;

(d) a reflective sheet of aluminized polymer adjacent the barrier; and

(e) an interior cover fabric adjacent the reflective sheet.

4,397,347

FOLDABLE PANEL OR DOOR

Henri Brabant, La Cote, 43220 Dunieres, France

Filed Oct. 14, 1981, Ser. No. 311,455
Claims priority, application France, Aug. 12, 1980, 80 17766
Int. Cl.³ E06B 3/94
U.S. Cl. 160—231 R **4 Claims**

1. A foldable panel for forming a vertically foldable or extendable wall or door comprising:

two substantially coextensive webs which are secured to each other along pairs of parallel transversely extending connection lines defining between said pairs interconnected parallel pockets,

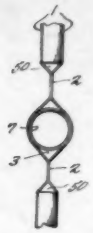
said webs being made of a flexible sheet material having at least partially transparent vertical zones,

the lines of each of said pairs defining therebetween a sheath,

a rigid hinge tube within each sheath,

a band of flexible insulating material within each of said pockets,

said bands having zones corresponding to said transparent zones of said webs formed with holes having air trapped



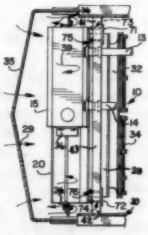
therein between said webs and being of sufficient size and number to provide good visibility through said panel.

4,397,348

RADIATOR BAFFLE

John E. Klem, Waukegan, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 16, 1981, Ser. No. 244,353
Int. Cl.³ F28F 9/22
U.S. Cl. 165—41 **20 Claims**

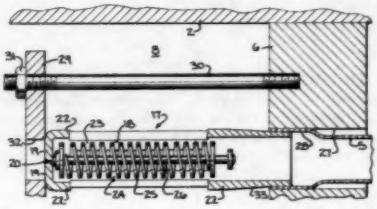


1. In a material handling vehicle having an engine mounted on a chassis frame, a coolant heat exchanger system comprising an engine driven fan, a bell-shaped shroud encircling the fan, wall means defining an air plenum connected to an air intake side of the shroud, a support frame mounted on a cross member of the chassis frame and connected to an air intake side of the wall means defining an air plenum, a heat exchanger means confined within and mounted to the support frame, an engine enclosure structure draped over the wall means defining an air plenum and support frame and mounted to the chassis frame, a grille longitudinally spaced from an air intake side of the heat exchanger means and connected to the enclosure structure and mounted to the chassis frame, and non-load-supporting top and side air stream supressing baffles comprising panels of elastomeric material having a high degree of surface conformability disposed in the clearance spaces between the transverse top and lateral vertical sides of the wall means defining an air plenum and the adjacent inner surfaces of said engine enclosure structure, and an air stream supressing bottom baffle disposed between the bottom portion of the wall means defining an air plenum and the cross member of the chassis frame, said top and side baffles forming a substantially complete air barrier between said wall means defining a plenum and said enclosure structure for suppressing aspiration of fan induced cooling air through the clearance spaces.

4,397,349
HEAT EXCHANGER WITH IMPROVED TUBE CLEANING ELEMENT BASKET RETAINING

Walter J. Baron, and Laird C. Cleaver, both of Milwaukee, Wis., assignors to Water Services of America, Inc., Milwaukee, Wis.

Filed Feb. 18, 1982, Ser. No. 350,016
Int. Cl.³ F28G 1/12, 15/02
U.S. Cl. 165—95 10 Claims



1. In combination in a heat exchanger having a housing, and having a plurality of longitudinally extending fluid flow tubes disposed within said housing and having tube sheets disposed within said housing and with said tube sheets having openings in communication with the ends of said tubes:

(a) a retaining plate,

(b) means fixedly mounting said plate in spaced relationship to the outer face of a said tube sheet,

(c) and a plurality of baskets for receiving shuttling tube cleaning elements, with each of said plurality of baskets being mounted coaxially with a respective tube sheet opening and having longitudinally extending walls with fluid flow openings therein,

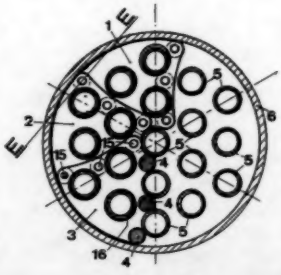
(d) the outer end portion of each said basket being confiningly engaged by said retaining plate,

(e) each said basket extending between said plate and said tube sheet with its said fluid flow openings disposed in the spa:e therebetween.

4,397,350
FLOW GUIDING IN TUBE BUNDLE HEAT EXCHANGERS

Rene Gossalter, St. Gallen, Switzerland, assignor to Swisscal Holding S.A., Panama

Continuation of Ser. No. 5,502, Feb. 22, 1979, abandoned. This application Jul. 29, 1981, Ser. No. 287,956
Claims priority, application Switzerland, Jan. 23, 1978, 667/78
Int. Cl.³ F28F 9/22
U.S. Cl. 165—159 5 Claims



1. A tube bundle heat exchanger comprising:

(a) a tubular outer casing for containing a first heat exchange medium,

(b) a plurality of spaced parallel tubes within said casing for containing a second heat exchange medium,

(c) a series of baffle plates within said casing, each extending transversely of said tubes and each having a sector angle of less than 180°,

(d) successive baffle plates being positioned in stepped relation to one another so as to define a helical flow path for the first heat exchange medium, and

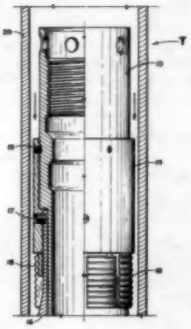
(e) a plurality of spacing supports connected between each successive pair of baffle plates,

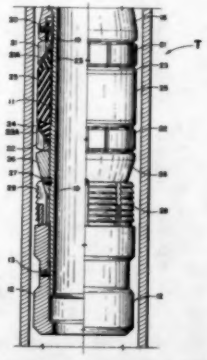
(f) at least some of said supports extending parallel to said tubes and being positioned along a radius of the casing between adjacent tubes so as to substantially form a barrier between the tubes to permit flow between said successive pair of baffle plates along the helical flow path, to constrain the first medium to follow said helical flow path.

4,397,351
PACKER TOOL FOR USE IN A WELLBORE

Monty E. Harris, Cleveland, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 35,159, May 2, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 258,213
Int. Cl.³ E21B 23/06, 33/129
U.S. Cl. 166—134 8 Claims





1. A packer tool adapted to be permanently set, in a packed off position, inside a well casing, the tool comprising:

an elongate mandrel which has a teeth section defined on its outer surface,

the mandrel is enclosed by upper components which include

an upper cone member slideable downwardly on the mandrel, an upper sleeve member fastened to the mandrel and to the upper cone member, a set of upper slip members which seat against the upper sleeve and which are slidable downwardly on the upper cone member, and means fastened to the upper cone member, for locking the upper cone into a first position on the mandrel, and thereafter locking the upper cone into a second position on the mandrel;

the mandrel is enclosed by lower components which include a lower cone member secured to the mandrel, and a set of lower slip members slideable upwardly on the lower cone member; and

a set of packing elements which enclose the mandrel, and which are positioned on the mandrel between the upper cone member and the lower cone member.

4,397,352

IN SITU COMBUSTION OF TAR SANDS WITH INJECTION OF GASES

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 203,028, Nov. 3, 1980, abandoned. This application May 4, 1981, Ser. No. 260,521

Int. Cl.³ E21B *43/243*

U.S. Cl. 166—260 **11 Claims**

1. In a process for the recovery of petroliferous products from a subterranean formation including tar sand deposits by in-situ combustion, the improvement comprising introducing into said subterranean formation, prior to the commencement of the combustion, a stream of a combustible gas selected from the group consisting of a relatively light hydrocarbon gas having a condensation point of −173° C. to −43° C. at a pressure of one atmosphere and hydrogen sulfide, said combustible gas introduced in an amount to substantially saturate the formation with said gas.

4,397,353

METHOD FOR VERTICAL FRACTURE GROWTH CONTROL

James P. Lacy, Box 3309, Midland, Tex. 79702

Filed Jun. 11, 1982, Ser. No. 387,325

Int. Cl.³ E21B *33/138, 43/267*

U.S. Cl. 166—281 **17 Claims**

11. In a borehole which extends downhole through a production zone; wherein the production zone includes a low water strata which produces hydrocarbons, and a high water strata which produces water, the method of isolating one strata from the other and treating one of the stratas with a treatment chemical comprising the steps of:

(1) simultaneously pumping a first treatment chemical and a second treatment chemical along separate flow paths downhole into the borehole;

(2) conducting said first treatment chemical into the low water strata;

(3) conducting said second treatment chemical into the high water strata;

(4) said second treatment chemical is a carrier fluid having barrier forming material therein which drops out to form a barrier between the high and low water strata so that the first treatment chemical is directed into the low water strata.

4,397,354

METHOD OF USING A WELL TREATING FLUID

Charles R. Dawson, Houston, Tex.; Norman N. Li, Edison, N.J., and Dennis E. O'Brien, Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Continuation of Ser. No. 79,978, Sep. 28, 1979, abandoned. This application Jun. 19, 1982, Ser. No. 389,349

Int. Cl.³ E21B *33/138*

U.S. Cl. 166—294 **6 Claims**

1. A method for treating a well penetrating a subterranean formation by blocking off unwanted flow paths comprising introducing into said well a shear thickening composite stable to pumping comprising a water swellable material, capable of rapidly forming a high strength paste when mixed with water, an oil-surfactant phase and water wherein the water swellable material, present in sufficient quantity so as to form a paste having a strength of at least 2000 lb/100 ft^2, and the water are kept separated by the intervening oil-surfactant phase, subjecting said shear thickening composite to shear forces sufficient to mix the water swellable material and the water, and mixing the water swellable material and the water causing the water swellable material to thicken rapidly into a high strength semi-rigid paste which blocks off unwanted flow paths.

4,397,355

WHIPSTOCK SETTING METHOD AND APPARATUS

Roy T. McLamore, Kingwood, Tex., assignor to Masco Corporation, Houston, Tex.

Filed May 29, 1981, Ser. No. 268,482

Int. Cl.³ E21B *7/08*

U.S. Cl. 166—297 **6 Claims**

1. The method of setting a whipstock and commencing drilling in a single trip of a well string including the steps of

running a whipstock having an anchor-packer connected to its lower end and a mill releasably connected to its upper

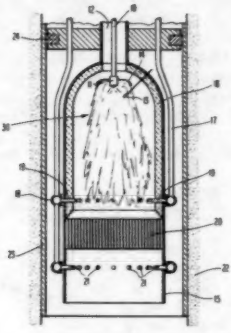
end on a well string connected to the mill into a cased well bore to a desired level,
determining the orientation of the whipstock,
exerting a fluid pressure through said well string to set the anchor-packer, and
lowering and rotating the well string to release the connection of the cutter to the whipstock and to commence milling through the casing to allow drilling of a new well bore.

4,397,356

HIGH PRESSURE COMBUSTOR FOR GENERATING STEAM DOWNHOLE

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19380

Filed Mar. 26, 1981, Ser. No. 247,918
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—303 **15 Claims**



14. A method of generating a mixture of steam and combustion gas downhole in an oil well, comprising the steps of:
injecting fuel and air into a combustion chamber,
igniting the fuel and air mixture, thereby creating a flame,
temporarily stopping the flow of fuel into the chamber so as to extinguish the flame,
resuming the flow of fuel,
mixing water with the combustion gas, continuing combustion by catalytic combustion of the gas while passing the gas through a catalyst-coated support and out of the chamber, the support being coated with a catalyst suitable to support catalytic combustion of the fuel.

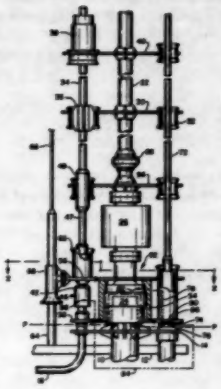
4,397,357

DISCONNECTABLE PRODUCTION RISER ASSEMBLY

Fredric L. Hettinger, Ojai, Calif., assignor to Vetco Offshore, Inc., Ventura, Calif.

Filed Apr. 20, 1981, Ser. No. 255,972
Int. Cl.³ E21B *33/035*
U.S. Cl. 166—345 **5 Claims**

1. A production riser assembly for a production of oil to a floating platform comprising: a central riser; a major locking connector fastened to the lower end of said central riser; a plurality of production risers annularly surrounding said central riser; a flexible pipe forming the lower portion of each of said production risers; a base plate anchored to the seabed; a vertically oriented central riser stub fastened to said base plate and adapted to lock with said major locking connector; a plurality of vertically oriented flowline stubs fastened to said base plate and annularly spaced around said central riser stub; a plurality of hydraulically actuated minor connectors; a crossover assembly comprising, said major locking connector, a plurality of flowline crossover subs adapted to slidably seal with corresponding flowline stubs at their lower end and having half of each minor connector at its upper end, and a frame securely holding said crossover subs in spaced relation with said major locking connector; and the other half of each of said



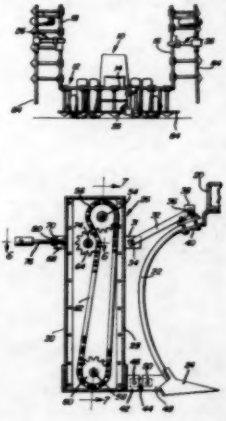
minor connectors located at the lower ends of said flexible pipes.

4,397,358

FLOATING ROD WEEDER

Barry L. Handy, Box N-53, Star Rte. 285, Scobey, Mont. 59263

Filed Jul. 21, 1981, Ser. No. 285,603
Int. Cl.³ A01B *39/19*
U.S. Cl. 172—44 **5 Claims**



1. In combination with an implement including at least one gang section having a plurality of laterally spaced tool shanks dependingly supported therefrom, a floating rod weeder assembly including an upstanding housing having upper and lower ends, first support means supporting said upper and lower ends of said housing behind a first of said tool shanks for limited vertical shifting relative to said first shank, powered output shaft means journaled from the lower end of said housing for rotation about a horizontal axis extending transversly of said gang section, a rod weeder shaft having one end supported from and driven by said powered output shaft, and a plurality of journal means mounted on said rod weeder shaft and spaced apart axially therealong and from said powered output shaft, a plurality of second support means supporting said journal

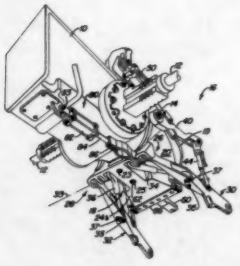
means rearwardly of and from a corresponding tool shank of the other tool shanks for limited vertical shifting relative to said second shank, said first support means including a forwardly projecting first mounting portion stationarily supported from the lower end of said housing and a rearwardly projecting second mounting portion stationarily supported from the lower end of said first shank, said second support means including third stationary mounting portions projecting forwardly from said journal means and fourth stationary mounting portions projecting rearwardly from the lower ends of said other tool shanks, said first and second support means further including elongated horizontal first and second links, respectively, extending between and pivotally anchored at their opposite ends to said first and second mounting portions and said third and fourth mounting portions, respectively, for angular displacement relative thereto about horizontal transverse axes, said first and second mounting portions and said third and fourth mounting portions including coacting portions engageable with each other to limit up and down vertical shifting of said first and third mounting portions and said second and fourth mounting portions relative to each other.

4,397,359

TRACTOR HITCH WITH YOKE HAVING PIVOTALLY SUPPORTED UPPER END

David S. Price, Kentwood; Richard A. Schafer, Traer, both of Mich., and Carl E. Kittle, Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 27, 1981, Ser. No. 257,688
Int. Cl.[2] A01B *63/112*
U.S. Cl. 172—430 21 Claims



1. An attaching mechanism for coupling a ground-engaging implement to a vehicle, comprising:

a housing supporting a rear vehicle axle;

a yoke with upper and lower portions, the upper portion being pivotally supported adjacent to the housing;

an implement coupler having a fore end pivotally coupled to the lower portion of the yoke and having an aft implement coupling end; and

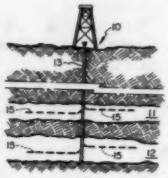
a load sensing link having a fore end coupled to the housing and having an aft end pivotally coupled to the lower portion of the yoke, the load sensing link including sensing means mechanically connected only to the load sensing link and interconnecting the fore and aft ends thereof for sensing draft load transmitted to the yoke from the implement coupler, the load sensing link further comprising power means interconnecting the ends thereof for adjusting the length of the load sensing link to pivot the yoke and adjust the fore and aft position of the implement coupling means.

4,397,360

METHOD FOR FORMING DRAIN HOLES FROM A CASED WELL

Jerry W. Schmidt, Hobbs, N. Mex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 6, 1981, Ser. No. 280,725
Int. Cl.[3] E21B *7/06*
U.S. Cl. 175—61 3 Claims



1. A method for forming a substantially horizontal drain hole in a subterranean formation from a substantially vertical cased wellbore having casing extending at least adjacent said formation, said method comprising:

setting a casing anchor in said casing substantially adjacent said formation;

positioning a sidetracking whipstock onto said casing anchor;

lowering a drill string having a casing mill attached to the lower end thereof whereby said mill is deflected by said whipstock into contact with said casing;

rotating said drill string to mill a window in said casing;

removing said drill string from said wellbore;

removing said sidetracking whipstock from said casing while leaving said casing anchor in place;

lowering a deflecting tool onto said casing anchor, said deflecting tool having a deflecting surface which has a radius of curvature between approximately 11 and approximately 28 feet;

lowering a drill string having a flexible section on the lower end thereof to which an earth boring means is attached whereby said earth boring means is deflected by said deflecting surface of said deflection tool through said milled window; and

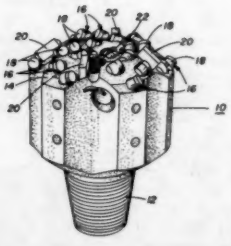
rotating said drill string to drill said substantially horizontal drain hole into said formation through said window.

4,397,361

ABRADABLE CUTTER PROTECTION

James W. Langford, Jr., Red Oak, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 1, 1981, Ser. No. 269,285
Int. Cl.[3] E21B *12/04*
U.S. Cl. 175—329 8 Claims



1. A rotary drag bit for drilling earth formations comprising:

a bit body having one end adapted to be connected to the

lower end of a drill string, the other end comprising a drilling head portion;

a plurality of cutting elements mounted on the head portion and projecting therefrom; and,

a plurality of individual protrusions interposed between the cutting elements, integral with and projecting from said head portion more than the extension of the cutting elements and fabricated from a metal more readily abraded by the earth formation than any of the cutting elements on the bit, said protrusions protecting said cutting elements during handling of the bit and entry of the bit into a borehole, and being abraded away to expose the cutting elements during drilling.

4,397,362

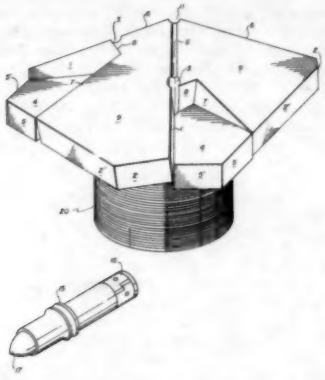
DRILLING HEAD

Rodney L. Dice, 3077 Allendale; Jimmy E. Hillman, 6303 Raderville Rt., and Robert F. Dice, 233 Robin, all of Casper, Wyo. 82601

Filed Mar. 5, 1981, Ser. No. 240,985

Int. Cl.³ E21B *10/60*

U.S. Cl. 175—393 **10 Claims**



1. A claw-type drilling head devoid of a central pilot bit comprising, in combination:

(a) a threaded stem portion for threadedly affixing said head to a drive source,

(b) a platform extending from said stem portion,

(c) plural drill bits,

(d) means for fixedly attaching said drill bits to said platform to rotate only therewith, said platform formed of plural sectors of pyramid shape,

(e) means for cooling and cleaning said bits while drilling including a centrally disposed axially extending cooling and cleaning means.

4,397,363

ROTARY DRILL BITS AND METHOD OF USE

John M. Fuller, Gloucester, England, assignor to Drilling & Service U.K. Limited, Gloucester, England

Filed Jan. 2, 1981, Ser. No. 222,142

Claims priority, application United Kingdom, Jan. 10, 1980, 8000606

Int. Cl.³ E21B *10/18*

U.S. Cl. 175—410 **12 Claims**

1. A rotary drill bit having a gauge region and for use in subsurface formations, comprising: a bit body; means defining a passageway within the body and adapted to carry a mud or like drilling fluid, and having an outlet opening at an external surface of the body; a single unbranched, continuous elongate channel extending from the outlet opening of the passageway and around the body in a spiral to adjacent the gauge region thereof; cutting or abrading means for cutting or abrading the formation, mounted substantially in the channel so that the fluid is caused to flow in one path past the cutting or abrading

means to clear away cuttings and to break down any blockage in the channel caused by cuttings, said cutting or abrading means comprising a plurality of discrete cutting or abrading elements.

4,397,364

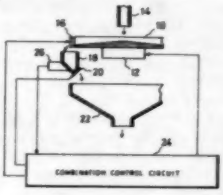
COMBINATION WEIGHING MACHINE

Takashi Hirano, Kobe, Japan, assignor to Yamato Scale Company, Ltd., Hyogo, Japan

Filed Jun. 26, 1981, Ser. No. 277,617

Int. Cl.³ G01G *19/22*

U.S. Cl. 177—25 **2 Claims**



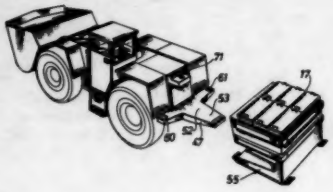
1. A combination weighing machine comprising a plurality of weighing units each having a weighing cradle for carrying articles to be weighed and a weight sensor for sensing the weight of said articles to produce a weight indicating signal; an adder circuit having a plurality of input terminals for summing incoming signals to produce a sum signal; a plurality of normally-open switches coupled respectively between said weight sensors and the input terminals of said adder circuit and provided each with a control terminal; a judging circuit for comparing said sum signal with a specific range of weight to produce an output signal when said sum falls within said range; a switch control circuit having a plurality of output terminals coupled respectively to the control terminals of said normally-open switches for selecting said output terminals successively in accordance with a predetermined set of combinations and producing output signals therefrom to close corresponding ones of said normally-open switches; a combination memory having a plurality of input terminals coupled to the outputs of said switch control circuit and corresponding output terminals for storing the inputs in response to the output of said judging circuit; and loading means controlled in response to the outputs of said combination memory for feeding articles into said cradles; said machine further comprising counting means for counting the number of outputs produced from said combination memory each time to provide a count of said number, comparator means for comparing said count with one half of the number of said weighing units to produce a control signal relating the difference therebetween, and loading control means responsive to said control signal for controlling the amount of articles fed by said loading means to each cradle thereby maintaining said count substantially equal to one half of the number of said weighing units.

4,397,365

BATTERY POWERED LOADING VEHICLE WITH BATTERY EXCHANGING DEVICE

Erik O. E. Harbe, Sköllersta, and Kurt A. R. Sundberg, Örebro, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed May 12, 1981, Ser. No. 263,072
Claims priority, application Sweden, Jun. 2, 1980, 8004086
Int. Cl.³ B62D 25/00
U.S. Cl. 180—68.5 16 Claims



8. A battery powered loading vehicle comprising:

a chassis having a loading means (12) at the front end thereof;

en electric traction motor (13) carried by said chassis;

a battery box (17) containing at least one battery;

a battery lifting device carried on said chassis, and including a generally horizontal battery lifting frame (47);

said battery box (17) being supported by said lifting frame and being removable from said chassis by actuation of said battery lifting device;

an electrical system coupling said battery box (17) to said traction motor (13);

horizontally disposed pivot means (50, 51) adjacent a rear end of said chassis for pivotally mounting said battery lifting frame to said chassis such that said battery lifting frame (47) projects rearwardly from said chassis;

power means (56, 57) coupled between said chassis and said battery lifting frame (47) for pivoting said battery lifting frame (47) about said pivot means (50, 51); and

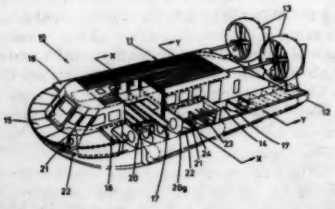
a seat (52) on the rear part of said battery lifting frame (47) underlying and carrying said battery box (17) thereon, said seat (52) being pivotable with said battery lifting frame (47) by actuation of said power means to selectively raise and lower said battery box (17) relative to said chassis.

4,397,366

AIR CUSHION VEHICLES

Michael W. Eldridge, Cowes, and John E. Dadswell, Newport, both of England, assignors to British Hovercraft Corp. Ltd., Yeovil, England

Filed Feb. 17, 1982, Ser. No. 349,609
Claims priority, application United Kingdom, Feb. 20, 1981, 8105517
Int. Cl.³ B60V 1/18
U.S. Cl. 180—116 10 Claims



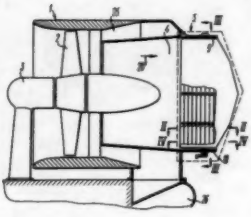
1. An amphibious air cushion vehicle having a rigid body structure including a rigid base formed as a buoyancy tank structure, a bow structure attached to and extending outwardly from one end of the buoyancy tank structure, side deck structures attached to and extending outwardly from each longitudinal side of the buoyancy tank structure, the bow structure and side deck structures each comprising a tubular circular section gunwale member and a tubular circular section chine member each supported outwardly from the buoyancy tank structure by frame members spaced from each other along at least a part of the length of the gunwale and chine members and attached thereto by welding, and hull plating attached to and supported by the gunwale, chine and frame members.

4,397,367

LIFT AND PROPULSION UNIT OF AIR-CUSHION TRANSPORT VEHICLE

Sergei K. Ivanov, ulitsa Artema, 102-b, kv. 44; Viktor E. Dudkin, ulitsa Avtotransportnikov, 1, kv. 72; Iosif A. Raskin, ulitsa Universitetskaya, 34, kv. 16; Valery P. Peredery, prospekt Dzerzhinskogo, 6, kv. 88, all of Donetsk; Jury M. Mokhov, ulitsa Zheleznovodskaya, 46, kv. 32, Leningrad; Vladimir K. Dyachenko, Sredny prospekt, 58/36, kv. 10, Leningrad; Evgenia G. Finkelshtein, naberezhnaya Chernoi rechki, 61, kv. 77, Leningrad; Igor A. Martynov, ulitsa Malaya Gruzinskaya, 41, kv. 115, Moscow; Alexandr S. Kudryavtsev, Begovoi proezd, 97, kv. 5, Moscow; Valery V. Protsenko, Schelkovskoe shosse, 89, kv. 490, Moscow, and Gennady G. Filipchenko, Kashtanovaya alleya, 2, kv. 248, Leningrad, all of U.S.S.R.

Filed May 20, 1981, Ser. No. 265,584
Int. Cl.³ B60V 1/14
U.S. Cl. 180—117 6 Claims



1. A lift and propulsion unit of an air-cushion transport vehicle, comprising: an annular duct; an axial fan, for conveying air through said annular duct, arranged at the entrance portion of said annular duct; a thrust nozzle arranged at the exit of said annular duct; said thrust nozzle having a reversing-and-steering device having side walls, which comprises; a plurality of independently rotatable rudder blades, and reversing vanes installed in the side walls of said reversing-and-steering device after said axial fan, said rudder blades closing the exit section of said thrust nozzle during reversal of the thrust by making with each other an obtuse angle whose apex is directed toward said axial fan to divert air to said reversing vanes, said side walls of said reversing-and-steering device comprising a polyhedral vaned surface, each facet of said polyhedral vaned surface comprising a cascade of bow-shaped reversing vanes.

4,397,368

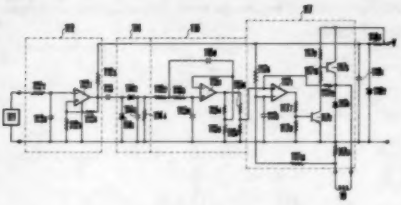
DRIVING CIRCUITS OF SOLENOID ACTUATED DEVICES

Sadao Takeshima, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Japan

Filed Feb. 21, 1979, Ser. No. 13,718
Claims priority, application Japan, Mar. 6, 1978, 53/24441
Int. Cl.³ B62D 5/00; F15B 9/09; H03F 1/36; H01H 47/32
U.S. Cl. 180—143 5 Claims

1. In a driving circuit of a solenoid actuated device of the type wherein a plunger is actuated by a solenoid coil, the

driving circuit comprising a comparator having a first input supplied with an analog control signal representing an operating condition of a member to be controlled by the plunger, a second input, and an output; and a power amplifier circuit including an output amplifier in the form of an output transistor for supplying exciting current to the solenoid coil in response to the output of the comparator, the improvement comprising means coupled to said coil for detecting a voltage



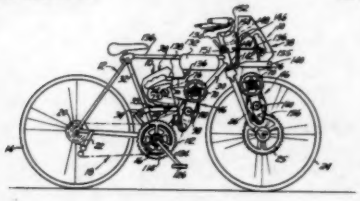
corresponding to said exciting current, positive feedback means, connected between said first input of said comparator and the output of one of said comparator and said output amplifier, and negative feedback means connected between said second comparator input and a junction between said detecting means and said coil, in order to provide ON-OFF control of said output transistor such that said exciting current comprises a current proportional to said analog control signal.

4,397,369

POWER DRIVE

Glenn F. Read, 6650 Orange Blossom La., Punta Gorda, Fla. 33950

Filed Apr. 13, 1981, Ser. No. 253,691
Int. Cl.³ B62M 7/02, 7/10
U.S. Cl. 180—205 **22 Claims**



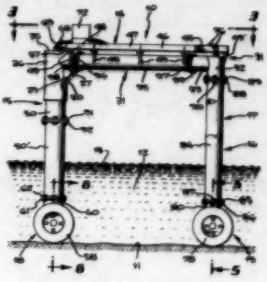
1. A power drive for coupling a prime mover to a utilization mechanism, said power drive comprising said prime mover having a housing and a power output shaft, a first toothed sprocket mounted on the output shaft of said prime mover, a support plate attached to said housing of said prime mover, a first shaft journaled through said support plate, a chainwheel mounted on one end of said first shaft, a chain driving said chainwheel from said first-toothed sprocket, a first pulley mounted on another end of said first shaft, a second shaft mounted on said support plate, a second pulley mounted on one end of said second shaft, a belt driving said second pulley from said first pulley, means for varying the tension of said belt from a mode whereby said belt is disengaged from at least one of said pulleys to a mode whereby said belt is engaged with both of said pulleys for driving said second pulley by said first pulley, a second toothed sprocket mounted on said second shaft, and chain drive means from said second toothed sprocket to said utilization mechanism.

4,397,370

SURF SERVICE VEHICLE

Richard H. Smith, Half Moon Bay, Calif., assignor to Healy Tibbitts Construction Co., San Francisco, Calif.

Filed Jun. 12, 1981, Ser. No. 272,930
Int. Cl.³ E04H 17/00; B62D 61/08
U.S. Cl. 180—210 **18 Claims**



18. A service vehicle for varied terrain comprising a substantially horizontal load carrying frame, three legs having upper ends of each in anchored engagement with said frame in a triangular disposition and extending vertically downwardly from the frame, each of said legs having a rolling assembly at the lower end adapted to provide for transportation of the frame over said terrain, at least one of said rolling assemblies comprising a motor having a sealed housing and having a horizontally extending drive shaft with a rotatable traction member on the drive shaft, control means on the frame for said motor including a control connection between said control means and said motor, one of said legs being a steerable leg having an upper end section in fixed position on said frame, a lower end section having a rotatable engagement with said upper end section and steering means in engagement with said lower section having an operative control accessible from said frame whereby to steer said vehicle during travel, the rolling assembly on said steerable leg comprising a wheel fork assembly having laterally spaced parallel legs, said traction member comprising a wheel rotatably supported between said legs, a flexible connection between said wheel fork assembly and the steerable leg whereby to enable tilting of said wheel fork assembly in a direction transverse to the fore and aft axis of said vehicle, said wheel fork assembly having a tubular base forming a junction for said legs and said flexible connection comprising hinge means on said wheel fork assembly, complementary hinge means on said steerable leg, a pivot means for said hinge means forming a restricted joint enabling tilting of said wheel fork assembly in a direction transverse to the fore and aft axis of said vehicle and inhibiting tilting of said wheel fork assembly in said fore and aft direction, and a flexible sleeve between the steerable leg and the base of said wheel fork assembly.

4,397,371

LOADER OPERATOR RESTRAINT SYSTEM

Carman P. Lynnes, Leonard; Eugene J. Kielt; Joseph M. Mather, both of Lisbon; Larry E. Albright, and Lonnie D. Hoechst, both of Gwinner, all of N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

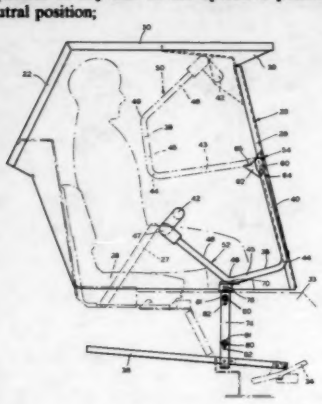
Filed Jan. 26, 1981, Ser. No. 228,536
Int. Cl.³ B60R 21/10
U.S. Cl. 180—271 **13 Claims**

1. A loader including:

a power operated working implement;

a pedal operated, hydraulically controlled apparatus having a plurality of operative positions for supplying power to the working implement, said apparatus having at least one

link connected between the pedal and an associated hydraulic control mechanism and said apparatus biased to a neutral position where power is not supplied to the working implement, the control apparatus capable of manipulation by the operator of the loader for placing the control apparatus in any one of the operative positions or the neutral position;



an operator restraint member having an engaged position for securing the operator in the loader during operation and a disengaged position for releasing the operator to permit him to leave the loader; and

means in operative cooperation with the apparatus link connecting the pedal and the hydraulic control mechanism and with the restraint member for locking the control apparatus in the neutral position when the operator restraint member is in its disengaged position.

4,397,372

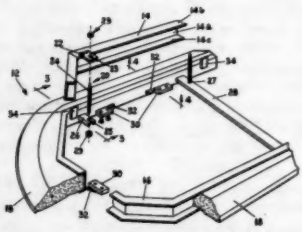
PENDULUM SUSPENDED BUMPER ASSEMBLY

Larry De Kraker, Holland, Mich., assignor to Bell & Howell Company, Chicago, Ill.

Filed Mar. 9, 1981, Ser. No. 241,699

Int. Cl.³ B60R *19/02;* **B60L** *3/04*

U.S. Cl. 180—277 **15 Claims**



1. A bumper assembly for a self-propelled vehicle and adapted to detect impact with an obstacle and preclude vehicle damage caused thereby, the vehicle comprising a vehicle frame with a front, back and lateral side, and means for propelling the vehicle, and the assembly comprising:

compressible means for cushioning the vehicle upon impact with an obstacle;

suspension means connected to the compressible means for suspending the compressible means from the vehicle frame in a manner enabling the compressible means to pendulously move in a multitude of directions of at least about 180° including rearwardly and laterally of the vehicle frame in response to vehicle impact with an obstacle;

detection means mounted between the vehicle frame and the compressible means, the detection means having activated and deactivated states and responsive to movement of the compressible means in any of said multitude of directions for switching between states; and

the means for propelling the vehicle is responsive to the detection means to decelerate the vehicle upon switching of the detection means between the activated and deactivated states.

4,397,373

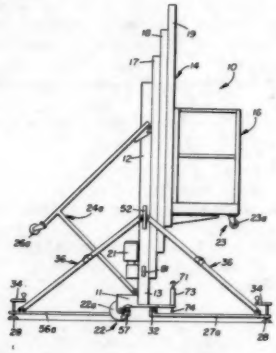
MOBILE PEDESTAL SCAFFOLD

Michael D. Ream, 3164 Condit Rd., Lafayette, Calif. 94594, and Paul C. Guignard, 1863 Lambeth La., Concord, Calif. 94518

Filed Jan. 25, 1982, Ser. No. 342,092

Int. Cl.³ E04G *1/34, 1/30, 1/24*

U.S. Cl. 182—17 **7 Claims**



1. A pedestal scaffold comprising:

a base member,

a vertically extending mast having a lower end mounted on said base member,

a work cage mounted on said mast for vertical movement between a lower position relative to said base member and an upper position spaced thereabove,

means for releaseably holding said cage to said base member to prevent relative vertical movement therebetween when said cage is in its lower position and is held to said base member,

a first caster means on said base member and a second caster means on said work cage, each caster means including at least one ground-engaging caster, there being at least three casters in all,

first and second elongated outrigger members, each having a ground-engageable pad at one end thereof,

securing means for connecting the other end of each of said first and second outrigger members to said base member and for holding the pad ends of said outrigger members outwardly from said base member and against vertical movement relative to said base member and for there positioning the pads of said first and second outrigger members relative to said first caster means such that the center of gravity of said work cage is vertically within the generally horizontal area defined by said pads and said first caster means.

4,397,374

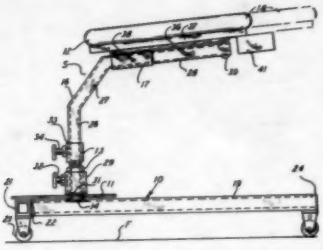
AUTO MECHANIC'S BODY SUPPORT

Donald V. Rumage, 2700 Mount Pleasant St., and Terry L. Biarnesen, 4720 N. Main St., both of Racine, Wis. 53402

Filed Jan. 8, 1982, Ser. No. 337,956

Int. Cl.³ B25H *5/00*

U.S. Cl. 182—129 **10 Claims**



1. An automobile mechanic's body support comprising a horizontally disposed T-shaped mobile frame, an additional frame member connected to said T-shaped frame at the juncture of the stem and cross bar of said T-shaped frame and extending upwardly therefrom, a standing platform supported on said frame members and extending to opposite sides of said additional frame member for the standing support of the automobile mechanic, and an additional platform supported on said frame members and extending at least substantially horizontally and spaced directly above and symmetrical with the vertical plane of the length of the stem of said T-shaped frame for the prone support of the torso of the automobile mechanic.

4,397,375

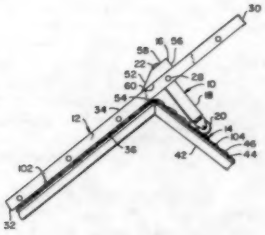
LADDER POSITIONING AND HOLDING STRUCTURE

Russell J. Hart, 740 S. Waverly, Dearborn, Mich. 48124

Filed Jan. 19, 1981, Ser. No. 226,054

Int. Cl.³ E06C *7/48*

U.S. Cl. 182—206 **10 Claims**



1. In combination, a ladder having side rails and spaced apart ladder rungs extending between the ladder rails, said ladder including a front, back, an upper end, a lower portion and sides, and structure for positioning and holding the ladder on a peaked roof comprising a wood two-by-four beam clamping member including opposite edges and sides positioned on the front of the ladder adjacent the upper end thereof with one side of the two-by-four beam in surface to surface engagement with the upper edge of the ladder rails, a wood two-by-six beam holding member including opposite edges and sides having one edge positioned in surface to surface engagement with the bottom edge of the rails of the ladder extending substantially perpendicularly to the ladder in alignment with the clamping member, roller means secured to the opposite edge of the holding member adjacent each side rail of the ladder and outwardly of the side rails in a plane parallel to the plane of the ladder, notches in the opposite edge of the holding member adjacent each side rail of the ladder and inwardly of the side rails in a plane parallel to the plane of the ladder, and clamping means for securing the holding member with the rollers attached thereto and the clamping member together on the front and back of the ladder respectively with the ladder clamped therebetween, comprising bolts extending through the clamping member adjacent to but on the inside of the ladder rails and at the lower side of a ladder rung adjacent the top of the ladder and through the holding member between the edges thereof and nuts secured in the recesses in the holding member to the bolts.

4,397,376

PROGRESSIVE-CENTRAL LUBRICATION SYSTEM

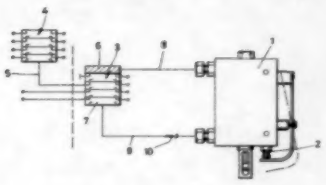
Horst Saretzky, Ennepetal, Fed. Rep. of Germany, assignor to De Limon Fluhme GmbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 235,289

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008053

Int. Cl.³ F16N *25/02*

U.S. Cl. 184—7 D **10 Claims**



1. In a central lubricating system having a progressive distributor with control segments and a pump operatively connected to a pressure connection of an initial segment of the progressive distributor, in particular for the manual feeding of lubricant by a hand pump or a grease gun, the improvement comprising

a predosaging unit defining a cylindrical chamber, including,

a piston disposed in said cylindrical chamber displaceably between two end positions,

a spring engages one end of said piston,

said piston divides said cylindrical space into two work chambers,

a closable lubricant changeover canal connects said two work chambers with each other, one of said chambers is connected to the pressure connection of the progressive distributor as well as to a feed line, the other of said two work chambers is connected to one of the control segments of the progressive distributor.

4,397,377

ELEVATOR SYSTEM

Alan L. Husson, Hackettstown, N.J., and Jane B. Lanctot, St. Paul, Minn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 23, 1981, Ser. No. 286,149

Int. Cl.³ B66B *5/02*

U.S. Cl. 187—29 R **28 Claims**

1. An elevator system for serving calls for elevator service in a building having a plurality of floors, comprising:

a plurality of elevator cars,

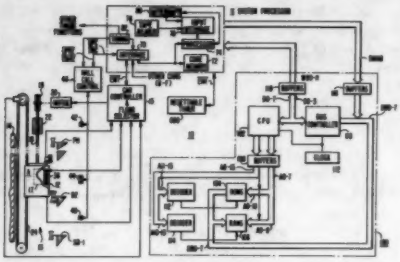
call means for registering calls for elevator service,

means for timing at least certain of the calls for elevator service from registration until service thereof,

dispatcher means for distributing the calls for elevator service among the in-service elevator cars according to a predetermined group operating strategy,

and monitoring means for monitoring the calls for elevator service to detect a malfunction of said dispatcher means,

said monitoring means including means for determining a dynamic threshold value for at least certain of the monitored calls, with said threshold value being responsive to at least one predetermined system parameter,



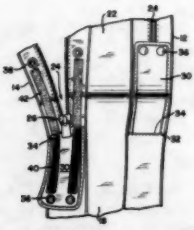
said monitoring means initiating a predetermined corrective modification of the elevator system in response to the call registration time of a monitored call exceeding the determined dynamic threshold value for the call.

4,397,378

LUGGAGE ZIPPER PROTECTOR

Robert M. Lee, c/o Hunting World, 16 E. 53rd St., New York, N.Y. 10022

Filed Dec. 2, 1981, Ser. No. 326,730
Int. Cl.³ A45C *13/36*
U.S. Cl. 190—52 8 Claims



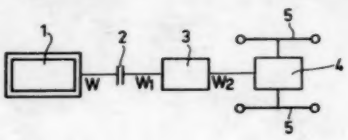
1. In luggage of the type having a front wall, an opposed rear wall, a pair of opposed end walls, a top wall, and a bottom wall, the top and end walls being divided by a continuous opening starting in and extending between opposite ends of the bottom wall to allow said bag to open substantially flat, and at least one zipper closure being affixed to the continuous edges of said opening and extending into opposite end portions of said bottom wall, the improvement comprising an elongated flap hingedly fixed at one end to each said end portion of said bottom wall and extending upwardly over the corresponding end portion of the adjacent end wall and releasably secured to said end wall, whereby said flap protects and cushions said zipper at the corner portion where said end wall and said bottom wall meet.

4,397,379

VEHICLE ENGINE CONTROL

Patrice Baudoin, Bougival, France, assignor to Regie Nationale des Usines Renault, France

Division of Ser. No. 891,995, Mar. 31, 1978, Pat. No. 4,291,594.
This application Sep. 29, 1980, Ser. No. 191,734
Claims priority, application France, Mar. 31, 1977, 77 09799
Int. Cl.³ B60K *41/14, 41/28*
U.S. Cl. 192—0.032 10 Claims



1. Apparatus for regulating a motor drive unit for a motor vehicle having an accelerator pedal, a brake pedal, a heat engine with a fuel feed and a transmission with a continuously variable transmission ratio, said apparatus comprising:

(a) first sensing means for sensing the speed of rotation w of the heat engine and generating a signal indicative thereof;

(b) second sensing means for sensing the displacement a of the accelerator pedal and generating a signal indicative thereof;

(c) third sensing means for sensing the speed of rotation w_2 of the output of the transmission and generating a signal indicative thereof;

(d) first control means for controlling the heat engine fuel feed;

(e) second control means for controlling the transmission ratio; and

(f) a control unit connected to said first, second, and third sensing means for receiving the signals therefrom and including:

(i) memory means for storing data defining at least one function representative of the variations of the heat engine fuel feed as a function of the heat engine rotation speed w, the acceleration pedal displacement a, and data defining an ideal speed of rotation of the heat engine as a function of predetermined criteria;

(ii) means operative during steady operation for acting upon the heat engine fuel feed to cause the power delivered by the heat engine to tend to approach the power corresponding with the displacement a of the accelerator pedal and acting upon the transmission to cause the transmission ratio to be such that the speed of rotation w of the heat engine tends to approach an ideal speed; and

(iii) means operative during transient operation for acting upon the heat engine fuel feed to cause the power delivered by the heat engine to tend to approach the power corresponding with the displacement a of the accelerator pedal and thereafter acting upon the transmission without affecting the engine power to cause the ratio to be such that the speed of rotation w of the heat engine tends to approach the ideal speed.

4,397,380

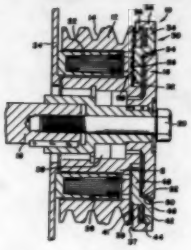
FAIL SAFE ELECTROMAGNETIC CLUTCH

Kwang Yew, Chatham, Canada, assignor to Canadian Fram Limited, Chatham, Canada

Filed Sep. 8, 1981, Ser. No. 299,696
Int. Cl.³ F16D *7/02*
U.S. Cl. 192—84 C 14 Claims

9. In a clutch, a driving member and a driven member rotatable about a common axis, and engagement structure for engaging said clutch to cause said members to rotate together and disengaging said clutch to permit relative rotation between

said members, said engagement structure being rotatable relative to both said members, said engagement structure having a pair of engaging surfaces for engagement with said driven and



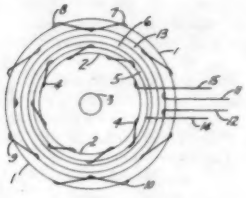
driving members, and selectively operable means to cause said engagement structure to engage and disengage the engagement surfaces on the structure with said driving and driven members.

4,397,381

MAGNETIC BRAKES AND CLUTCHES

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada H3H 1T1, and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec, Canada H3R 1K3

Filed Nov. 27, 1981, Ser. No. 325,144
Int. Cl.³ F16D *27/02, 13/10, 49/00*
U.S. Cl. 192—84 T **7 Claims**



1. A frictional rotational torque transfer device, comprising external and internal circular cylindrical annular mating members, at least one of said members being magnetic and carrying at least one toroidal insulated conducting winding, and at least one of said members carrying a friction lining, which is actuated by changes in mechanical dimensions, caused by circumferential magnetic fields induced in one or both of said mating members of said device, by electric currents in said windings, which change the rotational friction between at least one of said members and at least one of said frictional linings.

4,397,382

COIN OPERATED METER

H. Earle Branker, 1220 Blairmill Rd., Silver Spring, Md. 20901

Filed Aug. 10, 1981, Ser. No. 291,819
Int. Cl.³ G07F *17/24*
U.S. Cl. 194—61 **11 Claims**

1. A meter, comprising:

a housing having a coin box and a coin return;

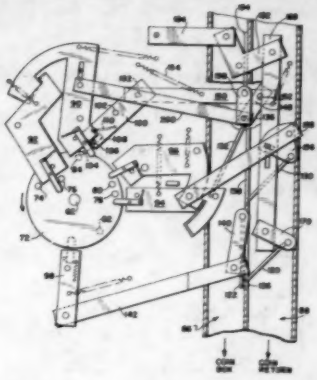
a clock mechanism located in said housing;

means for winding said clock mechanism upon successive insertion of coins;

escrow support means for releasably retaining at least one escrow coin in said housing, for directing the escrow coin to said coin box and for directing the escrow coin to said coin return, selectively;

program means, coupling said escrow support means to said clock mechanism, for actuating said escrow support means in response to movement of said clock mechanism to direct the escrow coin to said coin box;

escrow release means, coupled to said escrow support



means, for activating said escrow support means to directing the escrow coin to said coin return; and

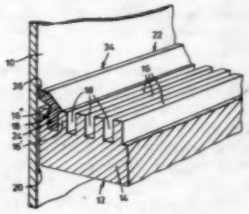
escrow lock means, coupled to said escrow release means, for preventing unauthorized release of the coin in said escrow support means.

4,397,383

ESCALATOR SAFETY INSERT

Robert B. James, 41 Dallington Dr., Willowdale, Ontario, Canada M2J 2G4

Filed May 11, 1981, Ser. No. 262,320
Int. Cl.³ B66B *9/12*
U.S. Cl. 198—333 **6 Claims**



1. For use on an escalator having moving steps, each defined at the top by a plurality of upstanding, spaced-apart teeth separated by a plurality of grooves, and a side skirt closely adjacent the sides of the steps: a safety insert of resilient material, the inserting being a one-piece, elongated member of constant section, the section comprising:

a lower portion sized and shaped so as to be receivable snugly within the furthest sideward groove in a step, and

an upper portion located above the plane of the tops of the teeth when the lower portion is received in its groove, the upper portion projecting in cantilevered fashion obliquely upwardly and sidewardly from the lower portion, in such a way that it is out of contact with the tooth immediately outward of the groove in which the lower portion is received, the upper portion terminating in an abutment region which, when the lower portion is received within its groove, is spaced inwardly from the escalator side skirt, and is spaced above the tooth immediately outward of the groove in which the lower portion is received, the junc-

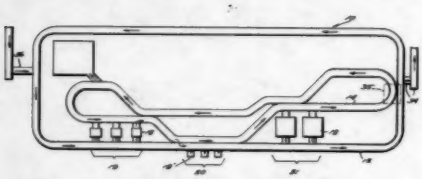
tion between the upper and lower portions being shaped to define a stress-reducing, rounded, S-shaped contour located along the outward margin under the upper portion, so as to permit substantial flexure of the upper portion under the weight of a passenger's shoe.

4,397,384

MANUFACTURING SYSTEM AND TRANSPORT ASSEMBLY

John E. Nohren, Jr., 5170 126th Ave. North, Clearwater, Fla. 33520

Filed Mar. 6, 1981, Ser. No. 241,425
Int. Cl.³ B65G *43/00*
U.S. Cl. 198—341 **16 Claims**



1. A method of achieving and maintaining a desired predetermined manufacturing system rate utilizing first and second generally parallel conveyors adapted to transport pallets containing workpieces thereon in the same direction, with workpiece acting stations disposed between the conveyors, such system capable of accommodating variations in pallet availability and station cycle interruption and rate, said method comprising the steps of:

(a) providing a plurality of workpiece acting stations in sets, all stations in each set for performing a given task on workpieces transported into operative relationship therewith, the number of stations being provided for each set being proportional to the relative amount of time that it takes to do that particular task;

(b) disposing the workpieces on the pallet;

(c) feeding pallets containing workpieces thereon on the first conveyor toward a first set of stations;

(d) selectively moving each pallet, depending upon station availability, into operative association with a station of the first set by moving the respective pallet off of the first conveyor toward the station;

(e) after completion of the desired activity upon each workpiece at a station in the first set, upon each workpiece at a station in the moving the pallet from the station onto the second conveyor;

(f) transporting each pallet on the second conveyor toward a second station set;

(g) selectively moving each pallet, depending upon station availability, into operative association with a station of the second set by moving the respective pallet off of the second conveyor toward the station;

(h) after completion of the desired activity upon the workpiece at a station in the second set, moving the respective pallet from the station onto the first conveyor;

(i) repeating steps (b)–(g) for each station set until all desired operations have been completed for a given pallet mounted workpiece.

4,397,385

CENTERING ARTICLES

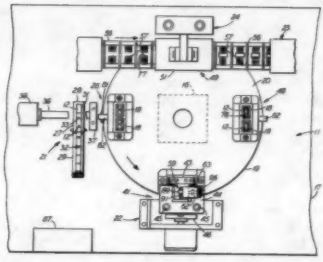
Raymond H. Booth, Walnutport; Jack J. Monahan, Allentown, and Fred J. Schneider, Northampton, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,562
Int. Cl.³ B65G *15/64*
U.S. Cl. 198—345 **5 Claims**

1. Apparatus for advancing a plurality of articles in sequence from a load station into an aligned position at a work station spaced from said load station, which comprises:

means for supporting the plurality of articles at spaced intervals, said supporting means including a plurality of article holders which are mounted on such supporting means at such spaced intervals;

means for indexing said article holders sequentially in at least two increments between such load station and said work station to advance said articles toward said aligned position at said work station in steps corresponding to said spaced intervals toward said aligned position at said work station with at least one intermediate index position, each of such article holders having a distinct, predetermined



deviation from such aligned position at said work station and in a predetermined direction with respect to the movement of the article holders toward said work station;

means for adjusting the position of said articles located at such intermediate index position removed by at least one of the incremental steps corresponding to said spaced intervals from said aligned position at said work stations; and

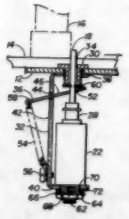
means for shifting the location of the article position adjusting means in a direction opposite to and by predetermined distances corresponding to said distinct, predetermined deviation of each such article holder from the aligned position at said work station.

4,397,386

RETRACTIBLE STOP HAVING REDUCED RETRACTION RESISTANCE

Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 20, 1980, Ser. No. 161,715
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—491 **11 Claims**



1. In a structure having a supporting portion which supports the weight of articles moving along its surface, means for selectively blocking or permitting the motion of such articles, comprising:

a stop member which is movable between upper and lower positions, one of which is its operative position wherein it blocks movement of such an article and is therefore sub-

ject to a horizontal force component therefrom, and the other of which is its retracted position in which it does not block such movement;

first force-exerting means for urging the stop member to its operative position;

second force-exerting means for moving the stop member to its retracted position; and

force-transmitting means for (1) connecting the stop member to the supporting portion of the structure, (2) transmitting to the supporting portion substantially the entire reaction force between the stop member and the blocked article, and (3) converting a portion of the reaction force to a force on the stop member toward the retracted position, thereby aiding retractile movement of the stop member by the second force-exerting means.

4,397,387

DISPLAY BOX

Georgy Bidegain, Morlaas, France, assignor to Embadac, Morlaas, France

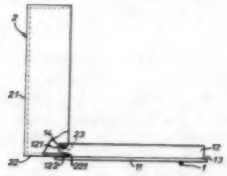
PCT No. PCT/FR80/00146, § 371 Date May 29, 1981, § 102(e) Date May 29, 1981, PCT Pub. No. WO81/00996, PCT Pub. Date Apr. 16, 1981

PCT Filed Oct. 8, 1980, Ser. No. 269,054

Claims priority, application France, Oct. 8, 1979, 79 24942

Int. Cl.³ B65D *5/52*

U.S. Cl. 206—45.23 **11 Claims**



1. Display box comprising a base adapted to receive an article to be displayed and having an upstanding sidewall, and a hollow cover, the base and the cover comprising two separate parts, means pivotally mounting said cover at the rear on said base for swinging movement between a closed position in which said cover surrounds said sidewall and an upright open position in which it at least partially disengages said base for permitting the article to be viewed, said means pivotally mounting said cover comprising two laterally protruding pins integral with one of said parts and two complementary through slots for receiving said pins formed in the other of said parts, said base having a substantially flat lower peripheral flange joined to and extending outwardly from under said sidewall, said lower peripheral flange being in engagement with the free edge of said cover in the closed position of said cover substantially along the entire flange, there being an opening extending along a rear wall portion of said sidewall and into rear parts of lateral wall portions of said sidewall adjacent said flange for permitting said cover to be pivoted to its open position in which the outer surface of the rear of said cover bears along a corresponding portion of said peripheral flange.

4,397,388

PORTABLE RECORD STORAGE CONTAINER

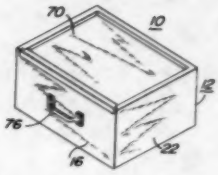
Anthony A. Quaranta, 8767 Orchard Ave., Pennsauken, N.J. 08109

Filed Jul. 27, 1981, Ser. No. 287,436

Int. Cl.³ B65D *85/57*

U.S. Cl. 206—309 **10 Claims**

1. A portable storage container for records comprising a body having a cavity for receiving a stack of vertically arranged records having vertically positionable first and second plane ends, a vertical back wall for engaging the second end of the stack of records, and a front wall which is inclined for allowing selective displacement and separation of the records toward the front wall; and locking means having a vertical contact surface positionable within the cavity of the body between the inclined front wall and the first plane end of the stack of records to have its contact surface engage the first end



of the stack of records for compressing the stack of records between it and the back wall and retaining the records in a vertical position and preventing their displacement and separation and being removable for allowing the displacement of the first plane end of the stack of records toward and into engagement with the inclined front wall of the body.

4,397,389

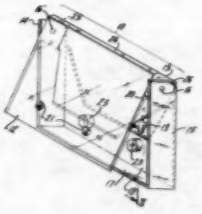
TAPE CASSETTE CONTAINER

Andrew M. Findeisen, 512 Cumberland St., Westfield, N.J. 07090

Filed Sep. 3, 1981, Ser. No. 298,945

Int. Cl.³ B65D *85/672, 21/02*

U.S. Cl. 206—387 **9 Claims**



1. A plastic container of such dimensions as to receive a tape cassette having a pair of reel openings, said container having in its closed configuration an upper face, a two segment lower face, and two pairs of parallel side walls which faces and walls thereby define a rectangular parallelpipedal shape, one side wall of a first pair of side walls being integral with both the upper face and a first segment of said lower face so as to define a lid, the remaining single side wall of said first pair of walls being integral with the second segment of said lower face and with the second pair of side walls so as to define a body, said lid being pivotably mounted for opening between said second pair of side walls, detent means operable to favor retention of said container in its closed configuration, a pair of internal pylons disposed on the inner surface of said second segment of said bottom face for engagement of the reel openings of a tape cassette, and complementary interlocking means operable to interlock the lid-defining upper face of one container to the second segment of the bottom face of a second like container, said interlocking means being disposed in matching relationship on (a) said lid-defining upper face and (b) on said second segment of said bottom face in alignment with said pylons.

4,397,390

CONTAINER FOR PACKED WIRE BUNDLES

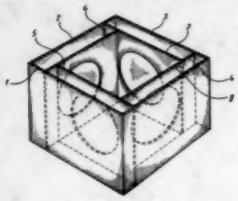
Kees van Es, Exlostraat 81, 2545 XN The Hague, Netherlands

Filed Apr. 20, 1981, Ser. No. 255,483

Claims priority, application Netherlands, Apr. 23, 1980, 8002366

Int. Cl.³ B65D *85/66, 85/671*

U.S. Cl. 206—391 3 Claims



1. A container for protecting a number of wire bundles from damage, each of said wire bundles being packed in a flat rectangular box having a bottom, four side walls and a top in which a central opening can be made, wherein said container comprises a lower wall and a plurality of side walls perpendicular to said lower wall, the interior space of said container being divided into a number of rectangular compartments and a central compartment by a plurality of partition members, said partition members extending from the lower wall to the top of said side walls and being parallel thereto, the number of said rectangular compartments so formed being equal to the number of wire bundles to be stored in said container, and each of said partition members being provided with an opening which coincide with the central opening in the upper wall of said flat rectangular boxes.

4,397,391

FEED UNIT FOR A DETERGENT AND PACKAGING THEREOF

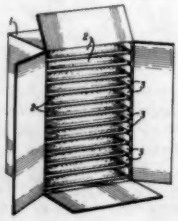
Emery G. P. Cornelissens, Nootdorp, and Gerardus J. W. H. Gudden, Arnhem, both of Netherlands, assignors to Akzo nv, Arnhem, Netherlands

Filed Apr. 27, 1981, Ser. No. 257,607

Claims priority, application Netherlands, May 1, 1980, 8002520

Int. Cl.³ B65D *77/00*

U.S. Cl. 206—526 5 Claims



1. A container for detergent, preferably a box, having at least two parallel walls, characterized in that the box comprises a substantial number of stacked detergent feed units that are each in the form preferably of a substantially flat, rectangular sachet, having one or more compartments containing detergent constituents, at least one edge of a compartment being sealed with a glue or other adhesive, which edge opens after a while upon contact with water in a washing machine, said sachets being so packaged in the box that the sealing edges thereof are bent by said parallel walls of the box.

4,397,392

CONTAINED BLOOD GAS CONTROL

Alan H. Runck, Boston, and G. Joseph Beatrice, Medford, both of Mass., assignors to Intensive Technology, Inc., Boston, Mass.

Filed Jan. 8, 1981, Ser. No. 223,364

Int. Cl.³ G01N *33/96;* B65D *85/00*

U.S. Cl. 206—528 19 Claims

15. A contained blood gas control comprising a container, a volume of blood gas control partially filling the container and a chemical seal for said control formed by mixing a water soluble biopolymer gel, a water soluble high molecular weight polymer and one or more selected water soluble blood compatible chemicals in water at an elevated temperature to form an aqueous solution, the gel and polymer each being present in an amount of from 0.5 to 6 percent (weight per volume of solution), layering the solution on the surface of the contained control and allowing the solution to cool until it forms a mechanically stable, thin but nonporous, plural phase gel seal at the surface of the control which is impregnated with said chemicals, is compatible with blood, is nonporous to the blood gases in the control and prevents changes in equilibrium between the liquid and gaseous phases in the blood gas control in the container.

4,397,393

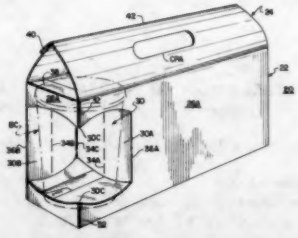
FAST FOOD CARRYOUT PACKAGE

Michael W. Pergande, Stone Mountain, Ga., and Anthony Giusto, Parsippany, N.J., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 9, 1981, Ser. No. 272,021

Int. Cl.³ B65D *5/42, 5/44, 5/46*

U.S. Cl. 206—549 7 Claims



1. Carryout package means for transporting containers of

beverage and the like in conjunction with other foodstuffs comprising:

a pair of parallel end walls and a pair of parallel sidewalls joined together to define corners, said package being foldable at said corners between a collapsed state and an erect state;

a bottom wall comprising interlocking means attached to said side and end walls and disengaged in said collapsed state and interlocked in said erect state to define a bottom wall for said package means;

closure defining folding flap means attached to said side and end walls for closing said package means in said erect state, said closure defining means including integral handle forming means for providing a carrying handle for said package means; and

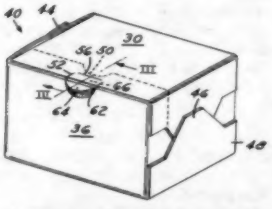
collapsible corner means in one of said corners defined between one of said sidewalls and one of said end walls for defining, in a collapsed state thereof, an internal partition extending between said sidewalls and forming a container receiving and transporting compartment bounded by at least one of said sidewalls, said internal partition and said one of said end walls and a food receiving compartment bounded by said sidewalls, said internal partition and the other end wall.

4,397,394

LIQUID CONTAINER WITH STRAW OPENING MEANS

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 19, 1982, Ser. No. 399,658
Int. Cl.³ B65D *5/72, 33/36*
U.S. Cl. 206—608 **6 Claims**



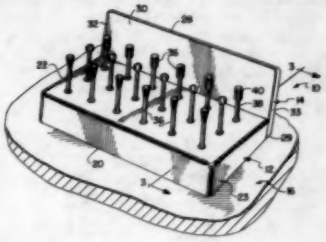
1. In a liquid carrying plastic coated paperboard container comprising a tubular body formed of first, second, third, fourth and fifth panels, with the first and fifth panels being overlapped and secured to one another to form one wall panel, two oppositely disposed end closures, and straw opening means formed in the one wall panel, the tubular body being adapted to being filled in a vertical attitude through one of the end closures and then, after the sealing of the one of the end closures, rotated onto the third panel, thereby locating the one wall panel and, hence, the straw opening means in the uppermost position of the container when so rotated for the insertion of a straw therethrough, the improvement comprising aligned outer and inner pairs of die cuts formed in the first and fifth overlapped panels, respectively, and extending from the respective free edges thereof, a score line formed on said first panel intermediate the inner ends of the outer pair of die cuts, and an arcuate die cut formed on said fourth panel interconnecting the inner ends of the inner pair of die cuts.

4,397,395

DENTAL BURR HOLDER

Thomas H. McKelvey, Macon, Ga., assignor to The Inventors Collaborative, Inc., Macon, Ga.

Filed Jan. 23, 1980, Ser. No. 114,337
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—60 T **29 Claims**



1. A dental burr holder comprising, in combination:

a holder body adapted to rest on a support and having a smooth upper surface interrupted only by a plurality of upwardly opening burr receiving apertures; and

a member rigidly coupled to and projecting generally upwardly from said holder body without a space in between and having a smooth front surface which faces across said upper surface of said holder body,

said upper surface and said front surface forming a background which color contrasts with the color of the burrs received in the apertures, and against which the burrs are viewed,

said background being continuously color contrasting and substantially visually uninterrupted except for said burr receiving apertures to allow quick and accurate selection of the desired burrs adapted to be received in the holder and silhouetted against said contrasting background,

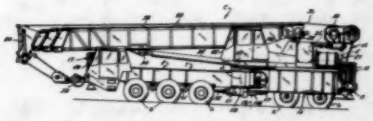
said upper surface of the holder body forming an acute angle with a horizontal plane from 0° to about 10°.

4,397,396

TRUCK CRANE HAVING AN ELONGATED MAIN FRAME

Christopher G. Kay, Roseville, Minn., and John M. Lanning, Solon, Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Nov. 7, 1980, Ser. No. 203,941
Int. Cl.³ B66C *23/36*
U.S. Cl. 212—189 **21 Claims**



1. An elongated main frame for a truck crane, said frame comprising, a tubular front portion and a tubular rear portion both of rectangular transverse cross section throughout their length and fabricated from steel plates including a top plate, a bottom plate, and two vertical side plates welded together, said front and rear portions terminating, respectively, in an outer front end and an outer rear end, said portions each having at least part of their side plates tapering toward one another and to a smaller transverse cross sectional area towards their said front and rear ends,

said frame including a vertically positioned cylindrical tub located between and rigidly secured to said portions, said tub being of generally circular shape when viewed in plan,

attaching means on said frame for attaching ground engaging means along the lower side of said frame,

means carried by said front and rear ends of said frame for mounting vertically positionable ground engaging jacks.

4,397,397

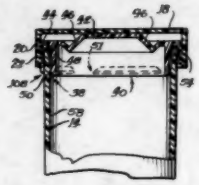
MOISTURE TIGHT CLOSURE AND CONTAINER SYSTEMS

James E. Herr, East Petersburg, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Apr. 17, 1981, Ser. No. 255,299

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—211 **5 Claims**



1. A closure and a container having a moisture tight sealing engagement with each other, said closure being either a child resistant or non-child resistant closure, comprising:

a container having a side wall, an upper end with an open mouth over which said closure is received, and locking members on said container adjacent said upper end;

an interior wall on said side wall of said container having detent projections extending inwardly into the hollow interior of the container, ends on the detent projections being spaced from one another in a circumferential direction and to define spaces between adjacent projections;

a closure having a top wall adapted to extend across the mouth of said container and a depending skirt wall, a sealing plug extending downwardly from said top wall and having a depending wall for insertion into said open mouth of said container;

said depending wall having an outwardly projecting annular sealing surface, the annular sealing surface having a diameter substantially larger than an inner diameter defined by the projections,

portions of the annular sealing surface expanding into the spaces between adjacent projections as the sealing surface is being pushed down past the projections or is being pulled upwardly past the projections, said sealing surface extending below said detent projections to hold said closure onto said container and to engage said interior wall below said projections to provide a moisture tight sealing engagement of said closure with said container, said projections holding the closure on the container.

4,397,398

COMPACT COLLAPSIBLE CONTAINERS

Mikio Watanabe, Tokyo, Japan, assignor to Tokyo Pet Cage Co., Ltd., Japan

Filed Oct. 19, 1981, Ser. No. 312,819

Claims priority, application Japan, Jul. 13, 1981, 56-103603[U]

Int. Cl.³ A01K *1/00*; A45C *11/20*; B65D *6/18*; E05C *7/04*

U.S. Cl. 220—7 **8 Claims**

1. Compact collapsible containers comprising:

(a) an open-top rectangular-solid-formed bottom box;

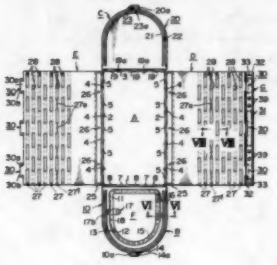
(b) a front end plate, hinged to the front end of the bottom box via a transverse flexible fold part, having a semi-circular upper half, a groove in its inner periphery, and an engage projection in its central inner top;

(c) a rear end plate of a similar form and construction to the front end plate, hinged to the rear end of the bottom box via a transverse flexible fold part which is positioned somewhat higher than that of the front end plate;

(d) a rectangular flexible right side plate, hinged to the right side of the bottom box via a transverse flexible fold part which is positioned somewhat lower than that of the front end plate, having a plurality of transverse grooves and transverse long slots over the middle and the top parts, and engage pieces in its top end;

(e) a rectangular flexible left side plate having the same form and construction as the right side plate, hinged to the left side of the bottom box; and

(f) a connection member of an open-top channel form comprising right and left sides, one of which is provided with engage cutouts, and the other of which is provided with detachable engage cutouts, and front and rear coupling pieces, each having an engage hole and projecting out-



wards horizontally fron the front or the rear end of the connection member, wherein the free end of one side plate is adapted to be fixed to the one side of the connection member by engaging the engage pieces of the one side plate with the engage cutouts of the one side of the connection member, and the free end of the other side plate is adapted to be detachably connected to the other side of the connection member by detachably engaging the engage pieces of the other side plate with the detachable engage cutouts of the other side of the connection member, wherein the front and the rear ends of the two side plates are adapted to be fitted into the grooves of the front and the rear end plates, respectively, and wherein the engage projections of the front and the rear end plates are adapted to be fitted into the engage holes of the coupling pieces of the connection member.

4,397,399

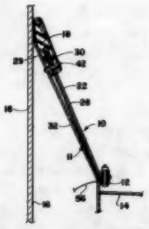
SEAL FOR FLOATING ROOFS OF STORAGE TANKS

Robert B. Wagoner, Broken Arrow, Okla., assignor to Tank Services, Incorporated, Tulsa, Okla.

Filed Sep. 8, 1981, Ser. No. 299,830

Int. Cl.³ H05B *1/00*; A45D *1/04*

U.S. Cl. 220—222 **9 Claims**



1. Seal means for the rim space of a floating roof movably

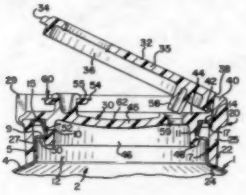
disposed within a storage tank and comprising flexible shield means having one end rigidly secured to the upper portion of the roof, wiper blade means provided at the opposite end of the shield means and engagable with the inner periphery of the storage tank to provide a seal therebetween, sealing liner means interposed between the shield means and the upper portion of the roof for precluding leakage therebetween, static drain means secured to the shield means and continuously engaged directly between the inner periphery of the storage tank and floating roof for passing any accumulated static electricity from the storage tank to the roof, the sealing liner means comprising yieldable sheet means disposed against and covering one face of the shield means and interposed between the shield means and roof for providing the sealing therebetween.

4,397,400

NONDETACHABLE RESEALABLE CLOSURE

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 8, 1982, Ser. No. 355,832
Int. Cl.³ B65D *43/16, 43/18, 51/18*
U.S. Cl. 220—259 **16 Claims**



1. A combination flexible plastic closure and a container neck assembly in which said neck is of tubular form having intermediate its ends an inwardly directed flange terminating in an apical edge and having from said edge an axially outwardly flaring section with a frusto-conical internal surface defining a pour opening, said closure comprising a plug removably positioned in said pour opening and including a tubular flexible wall having an annular sealing ring projecting in closed position under said flange in fluid-tight engagement therewith and an external sealing ring on said tubular wall having an apical edge in fluid-tight engagement with said frusto-conical surface, combination guard and fulcrum means encompassing said neck assembly and in the closed position of said plug extending axially above the plug, and means for withdrawing the plug from said pour opening by fulcruming upon said combination means and tugging on said plug to release the same from said opening.

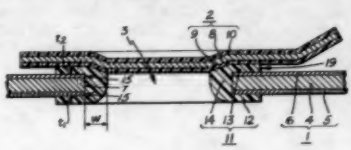
4,397,401

EASILY OPENABLE VESSEL CLOSURE AND PROCESS FOR PREPARATION THEREOF

Hiroshi Ueno, Yokosuka; Yasunori Miyamatsu, Ayase; Masanori Aizawa; Yasuo Kaga, both of Yokohama, and Kazuhisa Ishibashi, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 354,056
Claims priority, application Japan, Mar. 2, 1981, 56-28355; Mar. 31, 1981, 56-46207; Apr. 1, 1981, 56-47230; Jun. 10, 1981, 56-54256[U]; Feb. 8, 1982, 57-17640
Int. Cl.³ B65D *17/50, 41/02*
U.S. Cl. 220—260 **10 Claims**

1. An easily openable vessel closure comprising a can end member having a preformed opening, an easily peelable opening piece which is applied to the outer side of the can end member so that the opening piece covers said opening and adheres closely to the peripheral portion of said opening, and a protecting covering layer formed to cover the cut edge of the opening of the can end member, wherein the protecting covering layer is formed of a thermoplastic resin having a heat bondability and the protecting covering layer includes film layers heat-bonded to the inner and outer peripheral portions of the openning and a projecting cover heat-bonded to the cut edge of the opening integrally with said film layers, and said opening piece is heat-bonded to the can end member through



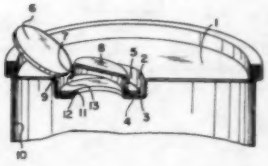
the protecting covering layer located outside the can end member and said protecting covering layer is stuck closely to the cut edge of the opening so that when the opening piece is peeled, the protecting covering layer is left on the side of the can end member.

4,397,402

EASY OPENING CONTAINER LID

Taniuchi Keiji, 6-7, Nishi-Koujiya 2-Chome, Ota-ku, Tokyo 144, Japan

PCT No. PCT/JP79/00116, § 371 Date Jan. 9, 1981, § 102(e) Date May 6, 1980, PCT Pub. No. WO80/02410, PCT Pub. Date Nov. 13, 1980
PCT Filed May 9, 1979, Ser. No. 253,766
Int. Cl.³ B65D *17/32*
U.S. Cl. 220—268 **4 Claims**



1. An easy-opening container lid, comprising a container lid body made of a thin plate and having a tear portion which consists of an annular, cross-sectionally U-shaped or rectangular groove formed by deep drawing, the bottom wall of which is folded in three layers and caulked, and which is provided with a score on the outer surface of the folded bottom wall; and a tear member having a double-layer side wall also constituting an inner wall of said annular groove, which inner wall thereby forms an annular, uprightly extending double-layer flange, and a recess in the central portion of said tear member, said container lid being characterized in that a tear end of said tear portion and a tear end of said tear member which are left on a container body after said container lid has been broken along said score by inserting a small, hard piece into said annular groove and inclining the same to press the inner wall thereof are assured with respect to the safety thereof.

4,397,403

CONTAINER OPENING APPARATUS WITH CAPTURED TAB

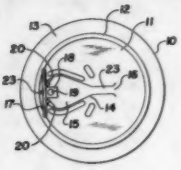
Henry L. Guimarin, Dallas, Tex., assignor to Guimarin Container Co., Incorporated, Dallas, Tex.

Filed Sep. 18, 1981, Ser. No. 303,395
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **11 Claims**

1. A container end with integral opening means comprising:
(a) a substantially flat and substantially circular disc adapted to form the end of a container;
(b) a weakening score with spaced apart ends formed in said

disc defining a partially removeable elongated tab having a first end and a second end and extending across the face of said disc with the first end of said tab positioned relatively near one edge of said disc and the second end of said tab positioned substantially diametrically disposed from said first end and between the geometric center of said disc and the opposite edge, the space between said spaced apart ends of said score defining said second end;

(c) pull means comprising an elongated body with a substantially flat edge portion extending therefrom; and



(d) attachment means securing said substantially flat edge portion of said pull means to said elongated tab near said first end thereof permitting said substantially flat edge portion of said pull means to rotate about said attachment means in a plane substantially parallel with the plane of said substantially circular disc;

whereby said pull means may be rotated to a position between said attachment means and the edge of said disc nearest said first end of said tab to draw said first end outwardly from said container to a position adjacent the opposite edge of said disc.

4,397,404

PLASTIC CONTAINERS AND COVERS

Henry J. Blanchette, Leominster, Mass., assignor to Plastican, Incorporated, Leominster, Mass.

Filed Sep. 28, 1981, Ser. No. 305,950
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 **6 Claims**

1. Container apparatus comprising in combination: a container comprising a side wall having a top end and a bottom end, a bottom wall closing off said bottom end, and a resilient circumferentially-extending flange; said top end terminating in a substantially flat upper edge; said flange having (1) a substantially annular outer flange portion attached to said top end of said sidewall a predetermined distance below said upper edge and (2) a substantially tubular inner flange portion attached to said outer flange portion and spaced inwardly from said side wall, so that an annular slot is formed by said flange and said side wall with said slot being closed at its bottom side and open at its top side and having first and second oppositely disposed locking grooves near its closed bottom side formed at least in part by recessed portions of said side wall and said inner flange portion; and a third groove on the inner side of said tubular inner flange portion,

a circular cover comprising a center body portion surrounded by and integral with an annular outer lip portion that terminates in an outer edge, concentric inner and outer tubular wall portions formed integral with and extending down substantially at a right angle from said lip portion, said outer tubular wall portion also being concentric with and spaced inwardly of said outer edge; said outer tubular wall portion terminating in first and second opposed beads and said inner tubular wall portion having a third bead in confronting relation with said second bead,

said outer tubular wall portion of said cover extending into said slot so that said first and second beads are locked in said first and second grooves and said inner flange portion extending between said inner and outer tubular wall portions so that said third bead is locked in said third groove, whereby said cover is locked to said container, and

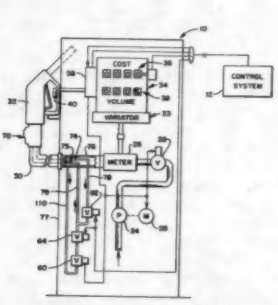
said center body portion of said cover being recessed below said annular lip portion and said annular lip portion substantially fully overlying and engaging said flat upper edge of said side wall, so that if a plurality of said containers with said covers locked thereto are stacked one upon the other in axial alignment, the compressive load presented by the weight of the stacked containers and their contents will be carried by the said side walls of said containers and not by said internal flange or said center body portion of said cover.

4,397,405

VALVE SHUTOFF SYSTEM FOR FUEL DISPENSING APPARATUS

Bradley L. Batson, Hebron, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Oct. 5, 1981, Ser. No. 308,779
Int. Cl.³ B67D *5/08*
U.S. Cl. 222—14 **7 Claims**

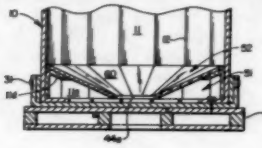


1. In a fuel dispensing apparatus having a fuel delivery line with a flexible fuel delivery hose and a manually operable nozzle at the downstream end of the hose for dispensing fuel, means for supplying fuel under pressure to the fuel delivery line, and a two stage valve system for the fuel delivery line selectively operable for preventing fuel flow and providing relatively high and low fuel flow rates through the fuel delivery line, the improvement wherein the two stage valve system comprises a first stage, fuel pressure operated valve in the fuel delivery line downstream of the fuel hose, the first stage valve being selectively operable by fuel pressure to fully closed and fully open positions thereof and in its open position providing said relatively high fuel flow rate, a pilot valve for the first stage valve having an inlet and an outlet and selectively operable to open and closed positions thereof for operating the first stage valve to its said open and closed positions respectively, a first fuel conduit which includes a first flexible conduit within the fuel hose, connecting the first stage valve to the pilot valve inlet, a second stage valve having an inlet connected to the fuel delivery line upstream of the first stage valve and an outlet and selectively operable to open and closed positions thereof and in its open position being capable of providing said relatively low fuel flow rate, and a second fuel conduit which includes a second flexible conduit within the hose, connecting the outlets of the second stage valve and pilot valve for deliverying fuel therefrom to downstream of said first stage valve.

4,397,406
KNOCKED-DOWN DRUM-LIKE FIBERBOARD CONTAINER FOR BULK MATERIAL WITH FUNNEL-LIKE DISPENSING BOTTOM

Thomas E. Croley, Worthington, Ohio, assignor to Willamette Industries, Inc., Delaware, Ohio

Filed Jun. 26, 1981, Ser. No. 277,970
Int. Cl.³ B65D *35/56*
U.S. Cl. 222—105 7 Claims



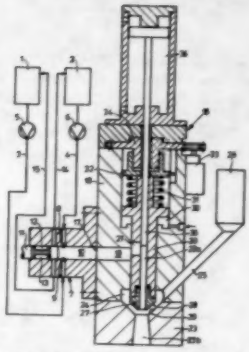
1. A container assembly comprising a tubular body of fiberboard with a bottom structure at its lower end, said body being formed of side-wall forming panels extending upwardly at the periphery thereof and which said side-wall forming panels are hinged together at vertical hinge lines to form said body of selected polygonal horizontal cross-sectional form, said bottom structure including support means secured to said side-wall panels; said bottom structure also including a funnel-like assembly composed of two main parts consisting of a peripheral support section and a funnel-like material-directing section supported thereby, said support section being of tubular form complemental to that of said tubular body so as to fit therewithin and comprising a plurality of upright support panels hinged together at vertical hinge lines and said upright support panels are equal in number to the said side-wall panels and are disposed in flat contact with the respective said side-wall panels and having lower edges resting on said bottom support means, said funnel-like section comprising a plurality of substantially triangular panels equal in number to said side-wall panels and hinged together at radially-extending hinge lines having wide ends disposed outwardly at the respective body panels and resting on the respective upright support panels and being inclined downwardly to narrower inner ends at a downwardly-opening dispensing outlet, said two main parts being unattached to each other prior to when the triangular panels rest on the respective upright support panels.

4,397,407
APPARATUS FOR THE PRODUCTION OF A SOLID-FORMING OR FOAM-FORMING MIXTURE COMPOSED OF AT LEAST TWO FLOWABLE REACTION COMPONENTS AND FILLERS

Dieter Skoupi, Linde, and Gerd Weber, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 245,816
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013237
Int. Cl.³ B67D *5/60*
U.S. Cl. 222—132 8 Claims

1. An apparatus comprising:
(a) storage containers for reaction components;
(b) feed pipes which lead from the storage containers via metering pumps to a mixhead where the reaction components merge via injection openings into a mixing chamber;
(c) an outlet passage connected to said mixing chamber, said outlet passage being arranged in a tube that is coaxially mounted in a housing, said tube being movable relative to said housing;
and (d) a storage container for filler which leads to said outlet passage of said mixing chamber via a filler feed pipe

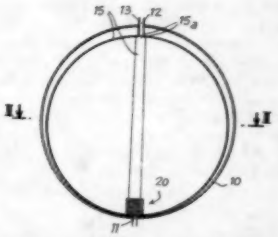


with the coaxial tube being designed as a closure means for said filler feed pipe.

4,397,408
SURFACE TENSION STORAGE DEVICE WITH BUFFER-TANK

Michel Robert, Montigny le Bretonneux Trappes, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Jun. 10, 1981, Ser. No. 272,384
Claims priority, application France, Jul. 8, 1980, 80 15189
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—394 15 Claims



1. Surface tension storage system comprising: an enclosure designed to contain a liquid and a pressurant gas, a liquid-expelling device situated close to an outlet of said enclosure and means for feeding liquid to the expelling device, wherein the said liquid-expelling device consists of a structure made up of an assembly of rigid elements defining:
a grid-like interior surface of the structure which delimits a central passage surrounded by the structure and communicating with the outlet,
a grid-like exterior surface which opens on to the inside of the enclosure,
a set of gaps delimited by the surfaces of the said elements, which extend continuously between the interior surface and the exterior surface of the structure and the width of which increases in relation to the distance to the central passage, from a minimum value selected so as to form a gas barrier along the inner surface delimiting the central passage, up to a maximum value selected so as to prevent the liquid contained inside the structure from being expelled into the tank, as long as the ambient acceleration, does not exceed a given threshold, and
a liquid input to where the feeding system arrives, said structure constituting a buffer-tank from where the liquid may

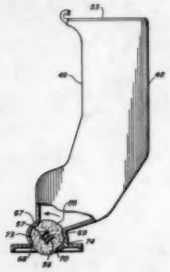
be expelled through the central passage under the effect of the pressurant gas at each liquid-utilizing phase and which is re-filled with the liquid contained in the enclosure by means of the feeding device.

4,397,409

TONER DISPENSING APPARATUS

Joseph Fantuzzo, Webster, and Karen R. Capizzi-Gooding, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1981, Ser. No. 287,461
Int. Cl.³ G01F *11/20*
U.S. Cl. 222—414 **14 Claims**



1. A toner dispensing apparatus comprising a toner hopper for containing a quantity of finely divided toner, said hopper having an elongated opening formed by the cooperation of the walls thereof through which toner is capable of being dispensed from said hopper, and

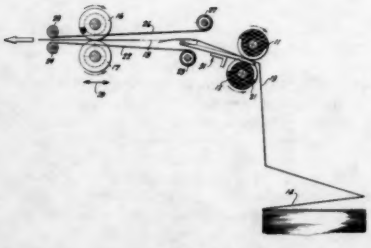
a dispensing roll to dispense toner from said hopper through said elongated opening of said hopper, said dispensing roll comprising a generally cylindrical resiliently deformable foam roll having a plurality of depressions of predetermined size, shape and volume uniformly disposed on the roll surface, said depressions being capable of holding therein toner to be transported, said resilient deformable foam roll including said depressions having a thin toner impermeable surface thereon said thin toner impermeable surface and said foam roll of said dispensing roll being formed from different material and being separate layers bonded together at their interface.

4,397,410

BURSTER

Marlin A. Schueler, San Leandro, Calif., assignor to Swingline Inc., Long Island City, N.Y.

Continuation of Ser. No. 922,744, Jul. 7, 1978, abandoned. This application Mar. 17, 1981, Ser. No. 244,753
Int. Cl.³ B26F *3/02*
U.S. Cl. 225—98 **10 Claims**



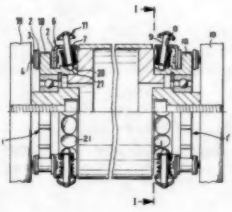
1. In a burster for separating successive sheets of paper from a continuous web along lateral perforation lines and having a pair of driven feed rollers spaced from a pair of snap rollers driven at a greater speed than said feed rollers, the improvement comprising a breaking element disposed between said pairs of rollers and having a triangular upper surface with the apex thereof horizontally aligned with the contact of said snap rollers and said triangular upper surface being inclined downwardly from the apex to the base adjacent the contact of said feed rollers and a secondary breaking unit having sides slanted inwardly and upwardly to a forward apex displaced from the apex of said triangular upper surface toward said snap rollers with said apices being horizontally aligned and also aligned longitudinally of the traverse of paper through the burster whereby paper moved by said feed rollers over said breaking element folds thereover for tearing the paper along a perforation line each time the snap rollers grip and pull the paper.

4,397,411

FEEDING CHAIN FOR FEEDING A PACKAGING MATERIAL WEB IN A PACKAGING MACHINE

Artur Vetter, deceased, late of Wolfertschwenden, Fed. Rep. of Germany; by Genoveva Vetter, nee Freisinger, heir, Bergstrasse 19, D-8941 Wolfertschwenden, Fed. Rep. of Germany; by Robert Vetter, heir, Bergstrasse 19, D-8941 Wolfertschweden, Fed. Rep. of Germany, and by Mona Vetter, heir, Bergstrasse 19, D-8941 Wolfertschweden, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,506
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022065
Int. Cl.³ B65H *17/34*
U.S. Cl. 226—173 **8 Claims**



1. A feeding chain for use in a packaging machine for producing packages from a packing material web to be fed through said machine by said feeding chain, said feeding chain comprising articulated chain links, clamping means mounted to the respective chain links, each clamping means comprising cooperable spaced-apart first and second clamping members, said first clamping member being secured to or integral with its associated link and containing an opening, a shaft positioned in the opening, means fixing the second clamping member to one end of the shaft opposite the first clamping member, said shaft being movable in the opening to permit them at times to be engaged and at other times to be disengaged and means for at times yieldably holding the clamping members engaged comprising an abutment at the other end of the shaft, a sleeve positioned about the shaft between the second clamping member and said abutment, a flange at the end of the sleeve adjacent the second clamping member at right angles to the axis of the sleeve and a spring positioned about the sleeve with one end engaged with the flange and the other end engaged with the abutment.

4,397,412

STANDUP SCREW GUN FOR LONG FASTENERS

George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 9, 1981, Ser. No. 232,458
Int. Cl.³ B25C 3/00
U.S. Cl. 227—119 10 Claims

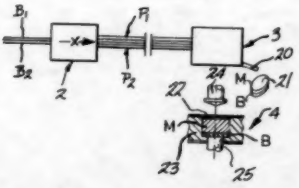
1. Feed tube means for feeding a fastener having a generally elongated shank and a head at one end thereof, said feed tube means comprising a first cylindrical feed section, a second cylindrical feed section longitudinally offset from said first section, and inclined transitional guiding and camming means therebetween for allowing a properly oriented fastener to reach said second feed section and for preventing an improperly oriented fastener from reaching said second section whereby said improperly oriented fastener is caught at least partially within said first section due to interference between the shank of said fastener and a wall of said first section and interference between said guiding and camming means and said head.

4,397,413

PROCESS FOR MANUFACTURING PLASTICALLY DEFORMED LIGHT METAL OBJECTS HAVING A CONNECTOR PART OF A DIFFERENT METAL

Alfred Wagner, Steisslingen; Adolf Ames, Hilzingen, and Ulf Hodel, Engen, all of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 22, 1981, Ser. No. 256,292
Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017106
Int. Cl.³ B23K 28/00
U.S. Cl. 228—174 8 Claims



1. A process for manufacturing deep drawn plastically deformed light metal objects having a light metal component joined securely to a heavy metal component comprising the steps of:

supplying a light metal component to an extrusion die;

supplying a heavy metal component to said die for extrusion along with said light metal component whereby said heavy metal component is joined to said light metal component during the extrusion; and

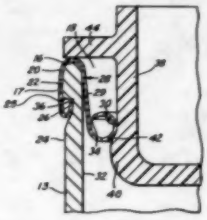
deep drawing said light metal component while said heavy metal component remains joined to said light metal component.

4,397,414

COMPOSITE CONTAINERS

Raymond Baldwin, Romiley, England, assignor to Metal Box Limited, Reading, England

PCT No. PCT/GB80/00149, § 371 Date Jun. 4, 1981, § 102(e) Date Jun. 3, 1981, PCT Pub. No. WO81/00994, PCT Pub. Date Apr. 16, 1981
PCT Filed Sep. 26, 1980, Ser. No. 268,985
Claims priority, application United Kingdom, Oct. 4, 1979, 7934566
Int. Cl.³ B65D 45/32
U.S. Cl. 229—5.7 4 Claims



1. A container comprising a container body and a removable closure, the body comprising a cylindrical shell of a paperboard, a base member sealably closing the bottom end of the shell, and a protective metal ring secured fast over a top end of the shell to define an open mouth of the container body, said ring having an outer wall portion fitting closely around an upper terminal portion of the shell and an inner wall portion extending downwards a substantial axial distance from the top end of the shell and terminating in a radially inwardly-directed curl whose terminal edge faces generally downwardly and radially outwardly, said ring further including a bight wall portion joining said inner and outer wall portions, the closure having means to engage behind the curl to secure the closure on the body, the curl being toroidal, of relatively large diameter and rigid, the whole of the inner wall portion being frusto-conical and having just sufficient radial resilience to temporarily deflect radially outwardly to allow the closure to pass the curl portion during insertion into and removal from the container mouth, the outer wall portion terminating in a flange, and the frusto-conical inner wall portion decreasing in diameter in a direction from said bight wall portion toward said curl.

4,397,415

CONTAINER AND BLANK FOR CONSTRUCTING SAME

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Feb. 25, 1982, Ser. No. 352,403
Int. Cl.³ B65D 5/72
U.S. Cl. 229—17 R 8 Claims

1. A thermoplastic coated blank for constructing a container, the blank comprising:

(a) body panels including front and back panels and a pair of side panels;

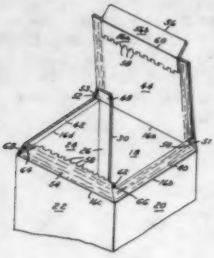
(b) a side fold-edge panel integrally connected to the top end of each of said pair of side panels;

(c) a front edge panel integrally connected to the top end of said front panel and including a fold-in segment and a fold-out segment, said fold-in and fold-out segments being interconnected by a weakened line, and a score line formed across the width of said fold-out segment at a distance away from said weakened line equal to the height of said fold-in panel segment;

(d) a cover panel integrally connected to said back panel;

(e) a diagonal score line formed on each of said side fold-in edge panels at the end thereof away from said front edge

panel, said diagonal score lines converging in an upwardly direction;



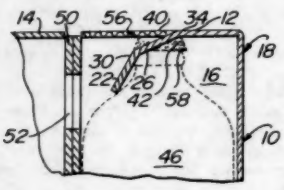
(f) and an additional diagonal score line formed on one of said front fold-in panel segment or said adjacent side fold-in edge panels.

4,397,416

HANDLE ACCESS FLAP

Richard E. Bishop, 3 Abner Pl., Weston, Ontario, Canada M9R 3L9

Filed Nov. 23, 1981, Ser. No. 324,160
Int. Cl.³ B65D 5/46, 25/28
U.S. Cl. 229—52 BC 3 Claims



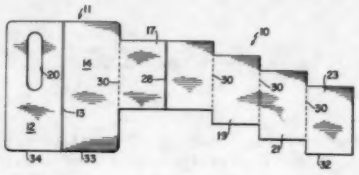
1. A box comprising a top wall, bottom wall, side wall, a central partition, a hand hole formed in said partition adjacent said top wall, an access flap formed in said top wall to provide access to said hand hole in said partition, said access flap comprising a main panel adjacent to but positioned on one side of said hand hole, a first fold line connecting the main panel to three spaced apart connecting panels, each of which is foldably connected to said top wall by a connecting fold line, said connecting fold lines being in axial alignment and substantially parallel to said first fold line and to said partition, two tabs projecting from said top wall toward a hand hole one between each pair of adjacent said connecting panels terminating in a free end edge, contacting edges on said main panel adjacent to said free edges, said tabs positioned to immediately overlie a pair of adjacent bottle tops when said box is filled with bottles, said contacting edges being positioned between said tops and said partition, the spacing between said contacting edges and said tops being sufficient to permit said main panel to move into said box by an amount limited by contact of said bottles by said main panel and into a position wherein said main panel protects a hand extending through an access hole formed in said top wall by movement of said access flap from engagement with said tops.

4,397,417

FOLDER FOR COUPONS

Albert W. D. Carlson, Roosevelt Island, N.Y., assignor to Rivercross Learning Corp., Roosevelt Island, N.Y.

Filed Oct. 17, 1980, Ser. No. 197,916
Int. Cl.³ B65D 27/04
U.S. Cl. 229—92.3 9 Claims



1. A folder for coupons or the like comprising:

a cover having front and rear flaps which are foldable relative to each other,

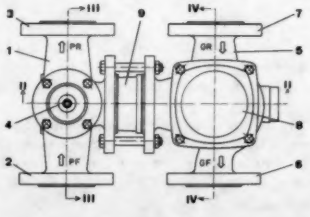
a plurality of coupons, each of said coupons having end edges and side edges, said coupons arranged side-to-side and having the side edges of adjacent coupons attached to each other with the first coupon of the plurality having one side edge attached to one of the front and rear flaps and the remaining coupons of the plurality attached side edge to side edge extending from the other side edge of said first coupon, said plurality of coupons forming a strip capable of being accordian folded along said attached side edges of adjacent coupons with the folded coupons being containable between the flaps of said cover when the flaps are closed, one of the edges of each of said coupons being at a position successively spaced from that of the corresponding edge of the coupon preceding it next closer to the flap to which the coupons are attached so that when said strip of coupons is accordian folded the portion of each coupon between its said one edge and said corresponding one edge of the next adjacent coupon is visible, at least some of said visible portions having indicia thereon, a window formed on one of the front and rear flaps at a position such that said visible portion of each of the said coupons between its said one edge and the corresponding one edge of the next adjacent coupon and any indicia thereon is simultaneously viewable through said window when said coupons are accordian folded and located between the folded flaps.

4,397,418

CONTROL UNIT FOR CENTRAL HEATING SYSTEMS

Lars S. Johansson, Vadstena, and Bert S. Nordqvist, Motala, both of Sweden, assignors to Vadstena Pumpar AB, Vadstena, Sweden

Filed Mar. 19, 1980, Ser. No. 131,794
Claims priority, application Sweden, Mar. 20, 1979, 7902489
Int. Cl.³ F04B 21/02; F24D 3/00
U.S. Cl. 237—59 7 Claims



1. A fluid flow control unit for central heating systems, said unit comprising two independent bodies, shunt valve means in

one of said bodies for selectively shunting fluid in a main fluid-distributing section, circulating pump means in the other body for distributing said fluid to a group fluid-distributing section, each of said independent bodies having inlet and outlet openings for connecting flow and return pipes of the respective fluid-distributing sections thereto, channel means enclosed within each of said bodies, and means for mechanically interconnecting said two independent bodies via a mechanical heat-blocking means made of a material having a heat conductivity figure which is lower than $\gamma = 1.00$ kcal/m h °C., said interconnection of the two bodies connecting the channels of the first body to the channels of the second body.

4,397,419

GUIDING ELEMENT FOR TOY VEHICLES

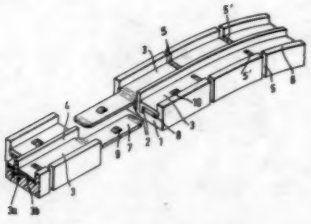
Artur Fischer, Weinhalde 14-18, 7244 Tumlingen, Waldachtal 3, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 182,326, Sep. 12, 1980, abandoned. This application Feb. 2, 1981, Ser. No. 230,584

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936751; Feb. 12, 1980, 3005120

Int. Cl.³ A63H *19/30*

U.S. Cl. 238—10 F **14 Claims**



1. A guiding element for a toy vehicle, comprising an elongated body portion which has at least one longitudinal groove extending in direction of elongation of said body portion and two sides spaced from one another in a first transverse direction which is transverse to the direction of elongation, said elongated body portion including a plurality of slots spaced from one another in the direction of elongation thereof so that because of said slots said elongated body portion can bend in one plane to assume a plurality of different curved shapes; and means for retaining said body portion when it assumes one of said curved shapes, said retaining means including at least one elongated retaining member which is received in said groove of said body portion and bendable to assume a plurality of different positions but is fixed in each of said positions, so that when said body portion is bent and assumes one of said curved shapes, said retaining member is also bent to and fixed in a respective one of said positions and thereby retains said one shape of said body portion, said retaining member having an angular cross-section and including two legs which extend in direction of elongation of said retaining member and are normal to one another.

4,397,420

SPRAYING OF PLANTS, AND APPARATUS THEREFOR

Jacobus P. Jacobs, Transvaal Province, South Africa, assignor to Caraid Patents, N.V., Curacao, Netherlands

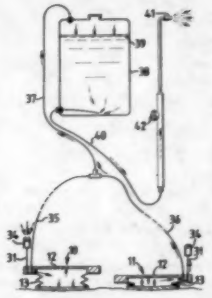
Continuation of Ser. No. 33,381, Apr. 26, 1979, abandoned. This application Aug. 23, 1982, Ser. No. 410,514

Claims priority, application South Africa, May 1, 1978, 78/2472

Int. Cl.³ B05B *9/08*

U.S. Cl. 239—154 **9 Claims**

1. Liquid spray apparatus comprising a portable tank for containing liquid to be sprayed and adapted to be carried by an operator, and at least one air pump comprising means defining at least one resiliently compressible chamber having an air inlet opening which is in communication with ambient atmosphere, and an air outlet opening which is connected to the interior of the tank so that air displaced from the chamber is fed to the tank to pressurize liquid in the tank, and securing means for securing the chamber under a foot of a wearer in such a way that, by the heel to toe engagement of the respective foot with the ground as he walks, the wearer causes successive compression and expansion of the internal volumn of the chamber by successively loading the chamber by applying his mass to it and unloading the chamber, the chamber being formed by a footplate which is adapted to be fitted under an article of footwear, which is worn by the wearer, and to be secured in position by said securing means, and a hollow cushion which is formed of an impermeable material which has an aperture



formed in it and which has the perimeter of the aperture fitted in a fluid tight manner to the underside of the footplate wherein the improvements comprises the footplate carrying locating means which are adapted to locate it relative to the article of footwear to which it is secured when the pump is worn, and the cushion is fitted to the footplate so that its central axis that traverses the footplate passes between the ball and the base of the heel of the respective foot whereby, when the pump is worn, said hollow cushion is substantially in line with the lower leg portion by which the wearer's weight is transmitted to his foot when that foot is grounded and pressure is generated by compression of the cushion substantially continuously throughout movement of the respective foot from heel to toe until the cushion is fully compressed by direct application of the wearer's body weight to it which occurs as the sole is brought to the ground.

4,397,421

METHOD AND MEANS FOR APPLYING CHEMICALS TO A FIELD

Daniel R. Schram, Rte. 2, Stratton, Nebr. 69043

Filed Aug. 10, 1981, Ser. No. 291,436

Int. Cl.³ B05B *3/00*

U.S. Cl. 239—177R **5 Claims**

1. In combination,

a self-propelled center pivot sprinkling apparatus comprising a water supply pipe movable about a center pivot point; a plurality of spaced-apart, wheeled drive towers supporting said supply pipe above the area to be sprinkled; a drive means on each of said towers to propel said towers and said supply pipe about said central pivot point; drive control means on said towers for controlling the operation of said drive means so that said towers will be selectively driven to maintain said supply pipe in an aligned condition as said supply pipe is moved about said central pivot point,

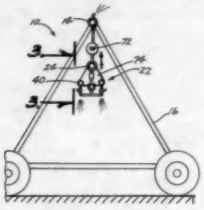
a liquid chemical spraying apparatus operatively supported by said drive towers and extending outwardly from said central pivot point to the outermost drive tower for spraying chemicals on the area beneath the supply pipe as the

drive towers propel said spraying apparatus around said central pivot point,

a source of liquid chemical in fluid communication with said spraying apparatus,

said source of liquid chemical and said spraying apparatus being fluidly isolated from the source of water for said sprinkling apparatus and from any water in said supply pipe,

said spraying apparatus comprising a main supply line extending from said center pivot point outwardly to the outermost drive tower, said main supply line being in fluid communication with said source of liquid chemical,



said spraying apparatus also comprising first and second applicator lines positioned below said main supply line between each pair of adjacent drive towers, spray nozzles on each of said applicator lines, the applicator lines between each pair of adjacent drive towers being fluidly isolated from the applicator lines between the other drive towers,

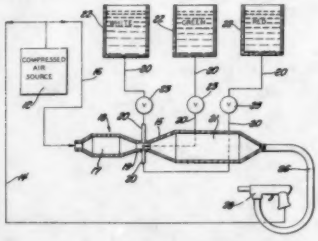
said applicator lines, between adjacent pairs of drive towers, being individually selectively fluidly connected to said main supply line whereby chemical may be selectively supplied to either or both of said applicator lines to permit the amount of applied chemical to be selectively varied.

4,397,422

FULL SPECTRUM SELECTIVE COLOR PRODUCING AND SPRAYING DEVICE

Marion V. Gwyn, 8035 Coolidge, Center Line, Macomb, Mich. 48015

Filed Jun. 4, 1981, Ser. No. 270,329
Int. Cl.³ A62C *13/60*
U.S. Cl. 239—307 **5 Claims**



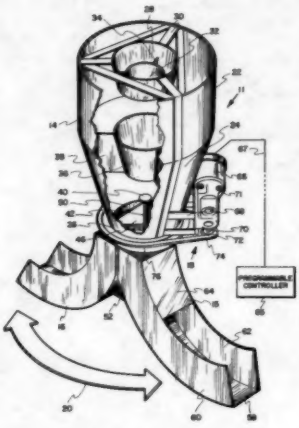
1. A colorant mixing and spraying apparatus comprising plural means for separately storing different colorants, a venturi mixer comprising a large diameter inlet chamber, a central convergent-divergent throat connected to the inlet chamber, and an enlarged outlet chamber connected to said throat; a colorant flow line (**20**) extending from each colorant storage means to the venturi throat so that each flow line has its discharge opening in the venturi throat surface; an independently adjustable metering valve (**23**) in each colorant flow line; means for supplying high pressure air to the inlet chamber of the venturi mixer so that pressurized air flows through the venturi throat to entrain colorant from each flow line into the air stream; and a spray device (**28**) operatively connected to the enlarged outlet chamber.

4,397,423

MATERIAL DISTRIBUTION DEVICE

Jeffrey L. Beaver, 1005 S. Third St., Lafayette, Ind. 47905; Robert J. Kennedy, Jr., 176 Ivy Hill Dr.; Kendall Smith, II, 488 Littleton, both of West Lafayette, Ind. 47906, and Gregory N. Brown, 1226 Greenbush Ave., Lafayette, Ind. 47904

Filed Feb. 25, 1980, Ser. No. 124,142
Int. Cl.³ B65G *65/32*
U.S. Cl. 239—684 **3 Claims**



1. A grain distribution device, comprising:

a cylindrical hopper having an upper section for receiving grain to be distributed, a lower section with cylindrical downwardly converging side walls, and a bottom edge for discharging grain from said hopper after said grain has passed therethrough;

inner and outer coaxially positioned funnels within said upper section of said hopper, said inner funnel contacting grain at low flow rates through said hopper to collect the same and direct said grain downwardly in an inner path, and said inner and outer funnels collecting grain at high flow rates through said hopper to collect the same with said inner funnel forming an inverted cone of grain over said funnel to direct grain to said outer funnel at high flow rates whereby said inner and outer funnels direct grain downwardly in inner and outer paths at high flow rates;

a central funnel within said lower section of said hopper, said central funnel receiving and collecting grain at low flow rates from said inner funnel and directing the same downwardly in an inner path, and said central funnel forming an inverted cone of grain at high flow rates to establish inner and outer downwardly directed paths of grain;

a separating cone below said central funnel for contacting grain in said inner path from said central funnel to separate the same into separate paths, said separating cone being formed of grain;

a pair of curved arms rotatively mounted with respect to said hopper, each of said arms having an input end adjacent to said bottom edge of said hopper for receiving grain therethrough and a discharge end that is substantially normal to the direction of flow of grain through said hopper, with each of said arms extending about one to three feet outwardly from an extended line through the center of said hopper; and

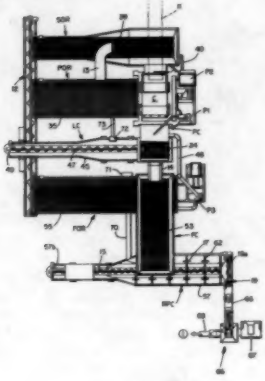
a variable speed drive means for rotating said arms at a rate sufficient to uniformly distribute grain discharged from said arms.

4,397,424

BATTERY RECLAIMING METHOD AND APPARATUS

Robert J. Zappa, Newnan, and Bobbie Peacock, Peachtree City, both of Ga., assignors to M.A. Industries, Inc., Peachtree City, Ga.

Filed Aug. 25, 1980, Ser. No. 181,267
Int. Cl.³ B02C 21/00
U.S. Cl. 241—20 5 Claims



4. The method of reclaiming whole lead acid storage batteries to classify and recover the component materials of such batteries, including both plastic case and rubber case batteries, comprising the steps of:

crushing whole batteries to reduce the batteries to a particulate mixture comprising relatively coarse particles including fragments of case material and fragments of lead metal, and relatively fine particles including lead oxide;

adding liquid to said particulate mixture to entrain said relatively find particles in liquid;

passing said mixture over a first classifying screen to separate the coarse particles from the fine particles and entraining liquid;

passing said separated coarse particles into a liquid upflow stream having velocity sufficient to entrain only the case fragments, so as to separate the relatively heavy lead metal fragments from the case fragments;

passing said separated case fragments over a second classifying screen to separate the relatively coarse case fragments from remaining particles of lead oxide;

placing said separated case fragments into a flotation tank to permit relatively dense rubber case fragments to settle downwardly in the tank while relatively light plastic case fragments remain at the surface of liquid in the flotation tank;

removing and collecting the plastic case fragments from the surface of the flotation tank;

removing and collecting rubber case fragments from beneath the surface of the flotation tank;

passing said liquid and entrained lead oxide particles from said first classifying screen to a primary liquid tank for the lead oxide particles to settle by gravity within the receiving tank;

withdrawing liquid above a predetermined level in said primary tank, and transferring the withdrawn liquid and remaining oxide particles entrained therein to a secondary liquid receiving tank for gravity settlement separation of said remaining oxide particles; and

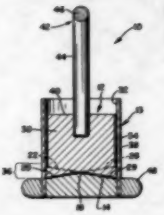
collecting together the particles of lead oxide separated at said separate steps of oxide removal including the oxide particles separated in said secondary tank.

4,397,425

GRINDING APPARATUS

Jerry W. Moore, and James Allen, both of Shreveport, La., assignors to Pennzoil Company, Houston, Tex.

Filed May 19, 1980, Ser. No. 150,711
Int. Cl.³ B02C 19/08
U.S. Cl. 241—169.1 4 Claims



1. A grinding apparatus for thoroughly crushing, particulating and fragmenting soft materials such as plant leaf tissue, comprising:

(a) a rotatable reamer having a substantially cylindrical peripheral wall surface and teeth forming a first grinding surface, said teeth extending radially outward from a center point of said grinding surface;

(b) a cup for receiving said reamer, said cup having an inner bottom surface and substantially straight cylindrical side wall means conforming to the peripheral wall surface of the reamer along a major portion of the reamer during rotation of the reamer within the cup, said peripheral wall surface and cup side wall means each being substantially smooth to provide a snug fitting relationship whereby preventing material from passing between the peripheral wall surface of the reamer and the side wall means, said inner bottom surface formed with teeth defining a second grinding surface and being substantially identical to the teeth of said first grinding surface so as to mesh therewith and provide a camming action during rotation of said reamer relative to the cup, whereby grinding of material placed between the first and second grinding surfaces is effected during rotation of said reamer within the cup;

(c) a groove extending from the top surface of said reamer to said first grinding surface, said groove acting to permit substantially all of the air in the bottom portion of said cup to escape during rotation of said reamer, said air escaping being necessitated by the camming action of said grinding apparatus; and

(d) a handle attached to the reamer and projecting longitudinally upwardly therefrom for rotating the reamer within the cup.

4,397,426

SHOE BRACKET ASSEMBLY FOR VERTICAL SHAFT IMPACT CRUSHING MACHINES

Donald R. Warren, Milwaukie, Oreg., and Kenneth D. Warren, Spokane, Wash., assignors to Spokane Crusher Mfg. Co., Spokane, Wash.

Filed May 7, 1981, Ser. No. 261,379
Int. Cl.³ B02C 13/09
U.S. Cl. 241—275 9 Claims

1. In a vertical shaft impact crushing machine having:

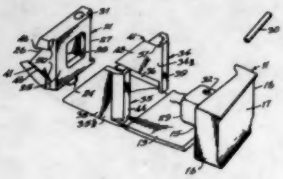
a rotatable horizontal impeller turntable;

a removable elongated impeller shoe mounted on the turntable, said shoe having an elongated back mounting face

extending along the length of the shoe between an inner end and an outer end;

an upright bracket member mountable to the turntable and having a front face and opposed side faces;

wherein the front face of the bracket member has a width that is less than the length of the impeller shoe to receive and mount the back surface of the impeller shoe, with the ends of the shoe extending beyond the side faces of the bracket member;



wherein the improvement comprises:

wear protector plates, each having a bearing face a wear face, and a forward end face; and

means for releasably mounting the wear protector plates to the side faces of the bracket member with the inner and outer end of the impeller shoe overlapping the forward end faces of the wear protection plates to secure the wear protector plates in place when the crushing shoes are mounted to the shoe bracket.

4,397,427

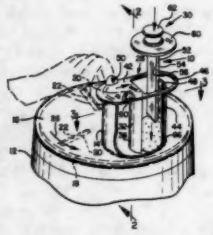
DEVICE AND METHOD FOR FEEDING FOOD PROCESSOR

Ival Howard, 105 SE. 80th, Portland, Oreg. 97215

Filed Sep. 22, 1980, Ser. No. 189,710

Int. Cl.³ B02C *18/22*

U.S. Cl. 241—30 **13 Claims**



1. A method of feeding food into a food processor having a rotary blade and a tubular feed chute located adjacent one side thereof, comprising:

(a) inserting an elongate laterally movable food holding member within said feed chute;

(b) placing food to be processed between said elongate food holding member and an interior surface of said feed chute and holding said food there by urging said food holding member laterally toward said interior surface, in a direction transverse to the length of said feed chute;

(c) pushing said food through said feed chute along the length of said food holding member, toward said rotary blade, between said food holding member and said interior surface; and

(d) guiding said food longitudinally along said food holding member and said interior surface of said feed chute while maintaining the orientation of said food during movement along said interior surface by manipulating said elongate movable food holding member.

4,397,428

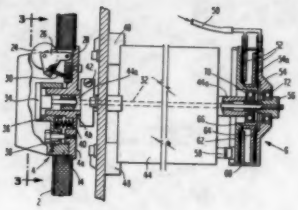
TAPE DRIVE HAVING IMPROVED REEL HUB

Paul F. Smith, Broomfield, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 23, 1981, Ser. No. 237,385

Int. Cl.³ G03B *1/04*; G11B *15/32, 23/04*; F01B *19/00*

U.S. Cl. 242—201 **3 Claims**



1. In a magnetic tape drive having a first shaft for carrying a first reel of tape, a second shaft for carrying a second reel to receive said tape, a magnetic read/write head, means for defining a tape path interconnecting said first reel, said read/write head and said second reel, hub means for releasably affixing said first reel to said first shaft, and pneumatic actuator means mounted on said first shaft and operatively connected to said hub means for operating said hub means, said actuator means comprising opposed pairs of rigid reaction surfaces and two or more inflatable bladders disposed between said opposed pairs of rigid reaction surfaces, corresponding ones of each of said pairs of surfaces being in contact with one another, whereby upon inflation of said bladders the two reaction surfaces comprising each of said pairs are moved relative to one another, while corresponding ones of each of said pairs of surfaces do not move relative to one another.

4,397,429

DEVICE FOR DETECTING A HOT POINT IN A SCENE BY MEANS OF INFRARED RADIATION AND MISSILE GUIDANCE SYSTEM EQUIPPED WITH SUCH A DEVICE

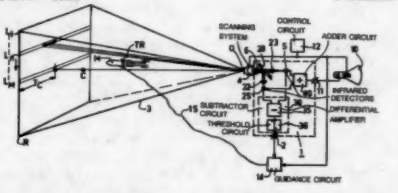
Jean-Pierre Fouilloy, Velizy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,594

Claims priority, application France, Sep. 12, 1979, 79 22794

Int. Cl.³ F41G *7/30*

U.S. Cl. 244—3.11 **8 Claims**



1. A device for detecting a hot point in a scene by means of infrared radiation in an infrared wavelength band, said device comprising:

a scanning system for scanning the radiation in the scene and generating a scanning beam therefrom;

a radiation-sensitive detection system for converting the scanning beam into an electrical signal; and

an electronic processing circuit for processing the electronic signal; characterized in that:

the device further comprises a filter arranged in the path of the scanning beam, said filter splitting the scanning beam into first and second subbeams, the first subbeam containing radiation of a wavelength in a first subband of the

wavelength band, the second subbeam contained radiation of a wavelength in a second subband of the wavelength band;

the detection system comprises first and second radiation-sensitive detectors, the first detector converting radiation of a wavelength in the first subband into an electrical signal, the second detector converting radiation of a wavelength in the second subband into an electrical signal; and

the electronic processing circuit comprises a subtractor circuit whose inputs are the outputs of the detectors, and whose output signal indicates the occurrence of a hot point.

4,397,430

SIMPLIFIED HOMING SYSTEM FOR A MISSILE OF THE SHELL OR ROCKET TYPE

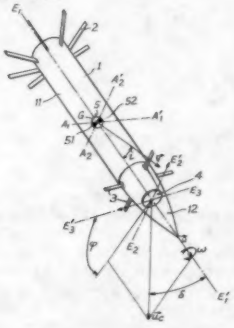
Richard Heidmann, Vernon, and Dino Crapiz, Ecos, both of France, assignors to Societe Europeenne de Propulsion, Puteaux, France

Filed Jan. 26, 1981, Ser. No. 230,117

Claims priority, application France, Jan. 29, 1980, 80 01869

Int. Cl.³ F41G 7/22

U.S. Cl. 244—3.16 **16 Claims**



1. Simplified homing system for a missile of the shell or rocket type which is not actively stabilized against rolling, comprising means for detecting a target, which means are directly mounted on and associated with the missile; an accelerometric device mounted directly on the missile structure and including at least one accelerometer having a sensing axis radial with respect to the missile axis to detect the lateral acceleration of the missile; means for elaborating a guiding force $\vec{F}_p$ applied to the missile via actuators acting on rudders, said elaborating means including passive means for ensuring the keeping up of the rolling movement of the missile; means associated with the accelerometric device for discriminating the lateral acceleration γ_{ext} of the missile due to outside forces and the centrifugal acceleration γ_c due to the rolling; means for determining the serviceable values related to the vector $\vec{V}$ indicating the relative speed of the missile with respect to the air in a reference system related to the missile from information supplied by the accelerometric device and the associated discriminator means; and means for determining serviceable values related to the vector $\vec{u}_c$ representing the direction of the target with respect to the axis of the missile from target detection means, wherein the means for elaborating a guiding force $\vec{F}_p$ elaborates said force from the said predetermined serviceable values related to the vectors $\vec{V}$ and $\vec{u}_c$.

4,397,431

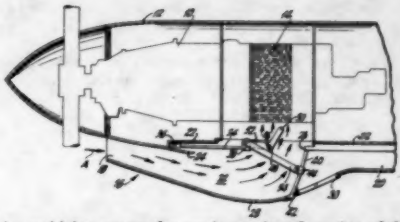
FAIL-SAFE, ANTI-ICING SYSTEM FOR AIRCRAFT ENGINES

Avi Ben-Porat, Norwalk, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,443

Int. Cl.³ B64D 33/02; F02G 3/00

U.S. Cl. 244—53 B **7 Claims**



1. An anti-icing system for use in an aircraft engine of the type including an air intake duct extending generally longitudinally of the engine and including a top wall, a bottom wall and side walls, said duct having a forward facing open inlet at one end, a side opening in the top wall disposed intermediate the length of the duct, and a discharge outlet at the other end, a deflecting vane rotatably and translatably mounted at one end to the top wall of the intake duct at a point intermediate the forward facing inlet and the side opening, and a bypass door pivotally mounted at one end to the bottom wall of the air intake duct at a point intermediate the side opening and the discharge outlet, said deflecting vane and bypass door adapted to be positioned to form an inertial particle separator, the improvement being an actuating linkage system comprising:

a journal bearing fixedly mounted to and extending from one of said side walls adjacent to the top wall at a point intermediate the free end of the deflecting vane and the side opening;

a support sleeve rotatably mounted on said journal bearing;

an actuator link extending from a pilot's station and connected to said rotatable support sleeve;

a linear link connected at one end to said rotatable support sleeve and having the opposed end thereof pivotally connected to the free end of the deflecting vane; and

a coupler link pivotally connected at one end to said free end of the deflecting vane and pivotally connected at the opposed end thereof to the bypass door at a point intermediate the width of said bypass door whereby movement of the actuator link varies the relative positions of the deflecting vane and the bypass door between ram mode and anti-icing mode positions, with said actuating linkage system at least partially balancing the aerodynamic forces on the deflecting vane and bypass door so that the input required to operate the anti-icing system may be manually applied by the pilot.

4,397,432

ADJUSTABLE LITTER SUPPORT ASSEMBLY

Michael C. Resetar, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 2, 1981, Ser. No. 269,179

Int. Cl.³ B64D 11/00

U.S. Cl. 244—118.6 **14 Claims**

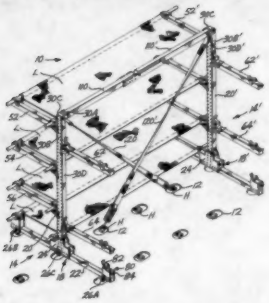
1. An adjustable litter support assembly for use in supporting medical litters onboard cargo aircraft or the like, and comprising:

a pair of spaced support stand assemblies, each support stand assembly including a base portion resting on a floor of a cargo aircraft or the like and each support stand assembly further including an upright portion extending from said

base portion in a direction substantially perpendicular to said floor;

each upright portion including a plurality of pairs of aligned attachment members vertically spaced from one another and extending outwardly from oppositely disposed sides of each upright portion, each upright portion further including a connecting link pivotally attached near the top thereof with at least one of said connecting links including means for detachably engaging the other connecting link to rigidly connect said upright portions against independent movement, and at least one connecting strap extending from near the top of each upright portion and engaging a fixture mounted in said aircraft floor near the base of the other upright portion;

at least one support arm extending outwardly from each upright portion for supporting a medical litter extending between and resting on each support arm;



said support arms each including locking means detachably clamping end portions of said medical litter against movement relative to said support arms and engagement means for detachably engaging two of said pairs of vertically spaced attachment members, said engagement means comprising a pair of flanges extending outwardly from an inboard end portion of each support arm, each said pair of flanges including hook-shaped end portions partially encircling a first pair of said pairs of aligned attachment members, and said engagement means further comprising a pair of spaced arms each attached to an inboard locking strap, said arms including hook-shaped end portions partially encircling a second pair of aligned attachment members spaced substantially vertically above said first pair, whereby said support arms are firmly maintained in an outwardly extended position relative to their respective upright portion.

4,397,433

REVOLVING-CYLINDER JETTISON DEVICE FOR TRANSPORTING AND RELEASING BUOYS ON AND FROM AIRCRAFT

Philippe P. Guitaut, Savigny sur Orge, and Pierre F. Coutin, Paris, both of France, assignors to R. Alkan & Cie, France

Filed Mar. 13, 1981, Ser. No. 243,403

Claims priority, application France, Mar. 26, 1980, 80 06701

Int. Cl.³ B64D *1/02*

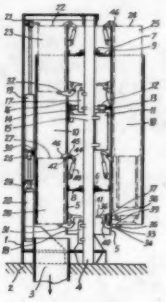
U.S. Cl. 244—137 R **4 Claims**

1. A buoy jettison device having an ejection passage for transporting and ejecting buoys on and from aircraft, which comprises:

(a) a revolver cylinder mounted to rotate about a fixed central axis rigid with the aircraft, said revolver cylinder comprising a plurality of angularly spaced tubes disposed on a circle and each adapted to receive one of a long buoy or two short buoys,

(b) drive means adapted to rotate said revolver cylinder about said central axis and to place the bottom of a selected tube of said revolver cylinder to register with said ejection passage of said device,

(c) two retaining means associated with each tube of the revolver cylinder and comprising a lower retaining means disposed at the bottom of the tube and adapted to retain one of a long buoy or a lower short buoy and an upper retaining means adapted to retain an upper short buoy, each retaining means comprising a two-armed lever pivoted to the tube and adapted to take one of a working position in which one arm of the lever projects through the tube or a release position in which said lever arm does not project through the tube, spring means to maintain said lever in one of its working position or release position, and control means to selectively release one of the lower or upper retaining means of the tube registering



with said ejection passage for jettisoning one of a long buoy or a short buoy,

(d) two wedging means associated with each tube of the revolver cylinder and comprising an upper wedging means disposed at the top of the tube and adapted to engage one of the top surface of a long buoy or of an upper short buoy and a lower wedging means disposed under the upper retaining means and adapted to engage the top surface of a lower short buoy, each wedging means comprising a lever pivoted to the tube and selectively urged by spring means in one of an operative buoy engaging position or an inoperative position in which it does not engage the buoy, and

(e) a laterally opening door provided on each tube for the loading thereof with one of a long buoy or with two short buoys.

4,397,434

SURVIVABLE SATELLITE BUS STRUCTURAL FRAME

Charles J. Farnham, Bellevue, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 126,272, Mar. 3, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 342,995

Int. Cl.³ B64G *1/50*; B32B *3/12*

U.S. Cl. 244—158 R **1 Claim**

1. A composite bus module structure for carrying a payload including a space sextant and payload sensor into earth orbit by a missile, said structure being resistant to heat transfer and thereby comprising:

an upper deck and a lower deck in parallel relationship thereto and spaced therefrom, said decks being of substantially triangular configuration, each deck having a base and a pair of sides, said decks having aluminum honeycomb cores, said cores covered by a graphite-reinforced epoxy composite laminate, said upper deck having the payload sensor mounted thereon;

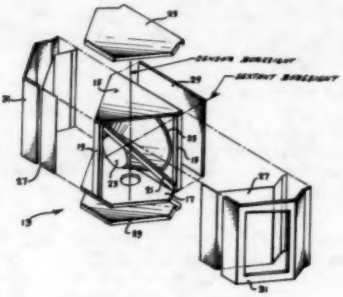
three box-section longerons fixedly secured vertically between said upper and lower decks, said longerons fabri-

cated from 12 piles of undirectional 0.005 inch thick graphite/epoxy material in a balanced layup orientation;

a pair of box-section shear braces fixedly secured diagonally between the apex of said upper deck and said base of said lower deck, said braces fabricated from 12 piles of unidirectional 0.005 inch thick graphite-epoxymaterial in a balanced layup orientation;

a cone mounting panel, fixedly secured vertically between said bases of said decks, said cone mounting panel having an aluminum honeycomb core, said panel core covered by a graphite-reinforced epoxy composite laminate;

a cone in the form of a frustum fixedly secured at a base to said cone mounting panel and extending inwardly, said



cone fabricated from two piles of 0.013 inch thick graphite/epoxy fabric material in a balanced 0° layup orientation, said space sextant mounted within said cone;

a plurality of equipment mounting panels positioned vertically between adjacent sides of said triangular upper and lower decks for holding the payload, said panels fabricated from aluminum sheets; and

insulating means fixedly secured to said upper and lower decks, said cone mounting panel, and said equipment mounting panels for preventing heat transfer therethrough;

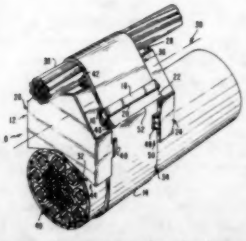
wherein said bus module structure maintains axes of said space sextant and payload sensor within approximately eighty arc-seconds deviation of each other.

4,397,435

CABLE SUPPORTING AND SPACING DEVICE

Richard W. Fisher, Rahway, N.J., and Frank A. Cristell, 205 E. Inman Ave., Rahway, N.J. 07065, assignors to Frank A. Cristell, Colonia, N.J.

Filed Dec. 21, 1981, Ser. No. 332,649
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—61 **10 Claims**



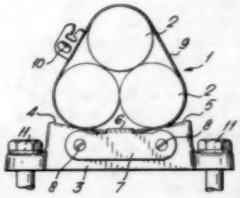
1. A cable supporting and spacing device comprising the combination of a block and a band, said block having a first and a second opposed side surface, a first elongated trough, said first elongated trough extending for the length of said block in an uppermost surface thereof, a second elongated trough, said second elongated trough extending along said length of said block in a lowermost surface thereof, at least one pair of projections, said at least one pair of projections being secured to said block at one of said first and said second opposed side surfaces, said projections having free ends, said free ends being directed towards one another, said band having one end thereof including a loop-like configuration extending transverse the longitudinal axis of said band, said loop-like configuration having a width greater than the width of said band, said band having a second end, wherein said second end of said band is adapted to pass through said loop-like configuration forming an encircling belt-like loop thereby, said band being bendable, said band having a length wherein said loop-like configuration defines a loop of greater size than the size of said block about its uppermost and lowermost and opposed side surfaces, said at least one pair of projections being positioned a distance apart so as to have portions of said projections extend partly over the marginal edges of said band when said band is positioned encircling said uppermost and said lowermost and said opposed side surfaces of said block.

4,397,436

DEVICE FOR SECURING AT LEAST ONE CABLE, PIPE OR OTHER ELONGATE MEMBER

Robert C. Lyon, Wigan, and Peter Fearns, Huyton, both of England, assignors to BICC Limited, London, England

Filed Aug. 10, 1981, Ser. No. 291,779
Claims priority, application United Kingdom, Aug. 13, 1980, 8026429; Jan. 12, 1981, 8100829; Feb. 19, 1981, 8105271
Int. Cl.³ F16L *3/22*
U.S. Cl. 248—68 R **3 Claims**



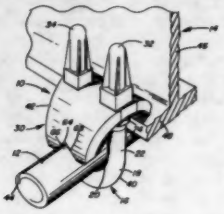
1. A device for securing at least one cable to a support comprising a base member having two support surfaces for said at least one cable, which support surfaces are inclined with respect to each other; a bar secured to and spaced from said base member longitudinally between said inclined surfaces and extending lengthwise of said at least one cable; a flexible strap of a length to pass around said bar and said at least one cable at least once; and tensioning means to tension said strap around said bar and said at least one cable, said tensioning means comprising a plate, walls upstanding at opposite ends of said plate, the distance between said walls being greater than the width of said strap and said upstanding walls having aligned apertures; a rod in the form of a split pin extending through both said aligned apertures and having an eye at one end and a longitudinally extending slit; and locking means operable to allow and to prevent rotation of said rod in said apertures, said locking means comprising a key which engages in said eye, and said walls having aligned slots, which said key enters to prevent rotation of said split pin.

4,397,437

BEAM CLAMP

Edward A. Madej, Verona, Pa., assignor to Robroy Industries, Verona, Pa.

Filed Jul. 21, 1980, Ser. No. 170,794
Int. Cl.³ F16L 3/24
U.S. Cl. 248—72 16 Claims



1. Apparatus for supporting a conduit from a structural member comprising,

a conduit support having a body portion for receiving a conduit and a connecting portion extending from said body portion,

a moisture resistant, polymeric coating on said body portion,

a clamping member positioned on said conduit support connecting portion,

said clamping member having a body portion with a first end adapted to engage a structural member and an opposite second end adapted to engage a conduit,

at least one aperture extending through said clamping member,

a moisture resistant, polymeric coating on said clamping member,

said clamping member coating forming a resilient annular flange surrounding said aperture,

said conduit support connecting portion extending through said aperture and said resilient annular flange,

a fastening member releasably engageable with said connecting portion to urge said clamping member first end portion into engagement with a structural member to draw a conduit into abutting relation with the structural member to secure the conduit thereto,

a moisture resistant, polymeric coating encapsulating said fastening member and forming a resilient, annular sealing flange,

said resilient, annular sealing flange surrounding an opening into said fastening member, said conduit support connecting portion extending into said opening into engagement with said fastening member,

a resilient seal boss extending radially inwardly from said resilient, annular sealing flange toward said opening,

said resilient, annular sealing flange being urged into surrounding sealing relation with said clamping member annular flange so that said resilient seal boss extends into said aperture as said fastening member is tightened on said clamping member connecting portion and said resilient seal boss engages said clamping member annular flange to provide a moisture resistant seal around said connecting portion at the point where said connecting portion extends through said aperture of said clamping member.

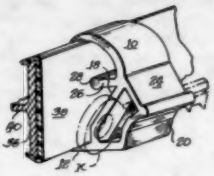
4,397,438

SELECTIVELY MOUNTABLE ARTICLE HOLDING FASTENER

Michael C. Chapman, Rolling Meadows, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 19, 1981, Ser. No. 226,303
Int. Cl.³ F24H 9/06
U.S. Cl. 248—229 9 Claims

1. A clip type fastener for resilient attachment to a supporting element, as a handle on a toolbox or toolbox drawer, comprising: a body portion having a recess for wedgingly receiving and holding an article, as a key or the like, in accessible position and a plurality of legs arranged in pairs and projecting therefrom in directions for attachment to a supporting element with the article holding recess in accessible position; said plurality including at least two pairs of legs with said legs being



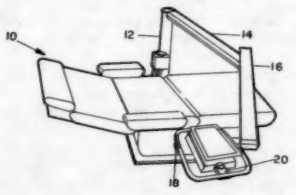
spaced in opposition to one another predetermined distances apart, whereby selective pairs of said legs are adapted for mounting the fastener to supporting elements of various cross-sectional configurations and said plurality cooperate to attach the fastener to a supporting element of a larger cross-sectional configuration.

4,397,439

BRAKE ASSEMBLY FOR DENTAL TRAY SUPPORT ARM

Lawrence A. Wilbur, and Stanley E. Gordon, both of Bay Minette, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 13, 1981, Ser. No. 234,231
Int. Cl.³ B61L 13/00
U.S. Cl. 248—292.1 42 Claims



1. A brake assembly for use with a tray support arm having a pair of first and second parallel members comprising:

means releasably engaging a portion of the first of the parallel members, said engaging means comprising a first brake shoe adapted to engage a first portion of the first of the parallel members;

means connecting said engaging means to the second of the parallel members, said connecting means being adapted for slidably connecting said first brake shoe with the second of the parallel members; and

fluid operated means actuating said engaging means, whereby relative movement of the first and second parallel members is prevented when said actuating means causes said engaging means to engage said portion of the first of the parallel members.

4,397,440

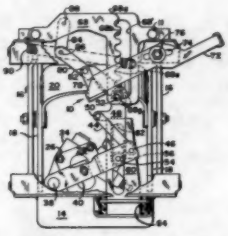
VEHICLE SEAT HAVING HEIGHT ADJUSTMENT, AUTOMATIC WEIGHT ADJUSTMENT AND PROTECTED RIDE ZONE

Garth O. Hall, and Harvey N. Tengler, both of New Berlin, Wis., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 3, 1980, Ser. No. 202,910
Int. Cl.³ F16M 13/00
U.S. Cl. 248—550 6 Claims

1. A suspension type vehicle seat of the type having a lower

seat base, an upper seat base, linkage means for supporting said upper seat base and permitting it to move in a restrained manner and generally vertically relative to said lower seat base, gas spring means for biasing said upper seat base upwardly, a vertically slotted member mounted on said lower seat base, a complementary contact member movable vertically within said slotted member between an up-stop and a down-stop so as to define a protected ride zone for the upper seat base, said contact member being mounted at the lower end of a vertical link whose upper end carries a height adjustment locking pin which may be selectively positioned in locking engagement with one of a plurality of teeth in a vertical height adjustment rack member mounted on said upper seat base, said locking pin being further supported by one end of a first link which is pivotally attached at said one end relative to said vertical link and locking pin and at its other end to a second link which is pivotally attached to said upper seat base, a manually operated height control lever having a manually engageable handle at one end and a pivot attachment to said first link at its other end, said height control lever having a pin and slot connection intermediate its ends to said upper seat frame, a resilient spring



member being attached to said height control lever and to said upper seat base to normally bias said locking pin into engagement with one of the teeth on said rack member, said height control lever being manually longitudinally movable against the bias of said spring member to remove said locking pin from said one tooth so that said height control lever can be pivoted at said pin and slot connection to move said first link and the locking pin attached thereto into engagement with a different tooth on said rack member, valve means connected to said gas spring means for controlling the flow of gas to or from said gas spring means in order to raise or lower said upper seat base, activator means connected to said valve means and mounted on said seat so as to move in response to vertical movement of said vertical link above or below a "mid-ride" position wherein said contact member carried by said vertical link is centered in said protected ride zone between said up-stop and said down-stop, and time delay means for preventing said valve means from being actuated by said activator means to control the flow of gas to or from said spring when said contact member is moving within said protected ride zone in response to normal vehicle vibrations.

4,397,441

WALL FORM AND METHOD OF ASSEMBLY THEREOF

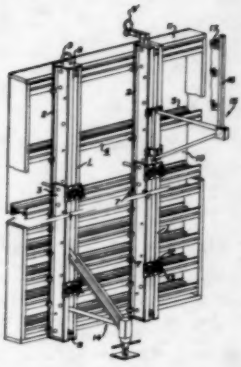
Henry J. Manderla, Burlington, Canada, assignor to Anthes Equipment Ltd., Mississauga, Canada

Filed Jul. 23, 1981, Ser. No. 286,258
Int. Cl.³ E04G *17/06*
U.S. Cl. 249—19 **7 Claims**

1. A form utilized in the pouring of concrete walls, said form including:

(a) a plurality of spaced parallel profiled primary strongback members, each said strongback member including an elongated web having opposed upper and lower longitudinal edges, a pair of lower flanges connected to and extending from the lower longitudinal edge of said web, an upwardly extending stub flange connected to the edge of each said lower flange most distant from said web, a pair of upper flanges connected to and extending from the upper edge of said web, and a downwardly extending stub flange connected to the edge of each said upper flange most distant from said web;

(b) a plurality of spaced parallel profiled structural members, each said structural member including an elongated web having upper and lower longitudinal edges, a pair of lower flanges connected to the lower longitudinal edge of said web and being configured to accept a lumber insert therebetween, a pair of upper flanges connected to and extending from the upper edge of said web, at least one downwardly extending stub flange connected to the edge of one said lower flange most distant from said web, and a lumber insert disposed intermediate the lower flanges of said structural member;



(c) a plurality of clamp members detachably engageable with said stub flanges of adjacent strongback lower flanges and structural member upper flanges to maintain said strongback and structural members normal to one another;

(d) a plurality of plywood panels detachably secured to said lumber inserts; and

(e) a plurality of tie plates and cooperating tie bolts detachably secured to the stub flanges of the upper flanges on said strongback members, said tie bolts extending through said plywood panels;

said form being capable of connection to, but spaced from, a complementary form whereby each said form can be efficiently assembled so that concrete can be poured between the pair of forms to produce a poured concrete wall.

4,397,442

IN-LINE SLEEVE VALVE

Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 9, 1981, Ser. No. 223,669
Int. Cl.³ F16K *31/00*
U.S. Cl. 251—342 **1 Claim**

1. An improved in-line sleeve valve comprising:

a modular tubular port member;

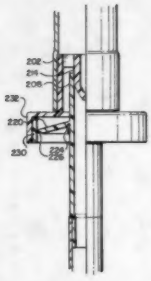
a stationary plug member affixed to and supported with said port member by a plurality of support members;

a reciprocating tubular sleeve member constructed and arranged for sealable telescopic engagement with said stationary plug member in a first position, and for the passage of liquid therethrough in a second position; and

resilient flexible flange means disposed between said reciprocating tubular sleeve and said modular tubing port member so as to seal the connection therebetween, said flange means being sufficiently elastic to allow easy manual

displacement of said tubular sleeve from said stationary plug in order to allow the flow of liquid, but also being biased in a first direction so as to return said tubular sleeve to said first position abutting said stationary plug upon the release thereof;

said resilient flange means comprising an integrally formed flanged member extending from said tubular sleeve member and having a distal connecting portion connected to said tubular port and a proximal portion extending between said tubular sleeve and said connecting portion, said flange member having an integrally formed hinge between



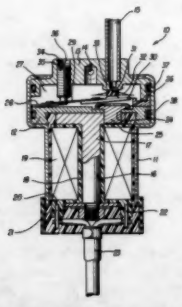
said tubular sleeve and said proximal portion, and an integrally formed hinge between said connecting portion, said integrally formed hinges comprising a weakened portion of reduced thickness adjacent to said reciprocating tubular sleeve and said modular tubular port member which facilitate reciprocating movement of said tubular sleeve member, the remainder of said resilient flange means being of greater thickness than said weakened portion so as to provide sufficient stiffness to said resilient flange so as to bias said flange in said first direction, whereby said tubular sleeve may be manually displaced from said stationary plug and returned thereto as required.

4,397,443

SOLENOID VALVE ASSEMBLY

Tsukasa Watanabe, Toyota; Hiroyuki Amano, and Naoji Sakakibara, both of Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 9, 1981, Ser. No. 271,996
Claims priority, application Japan, Jul. 11, 1980, 55-98483[U]
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—129 **6 Claims**



1. A solenoid valve assembly having a valve member disposed in a casing, movable between first and second positions for controlling communication between an inlet port and an outlet port provided in said casing comprising:

an armature of magnetic material operatively connected with said valve member;

a leaf spring fixed at a first end thereof to said armature and biasing said valve member to said first position;

a spring retainer having a first end portion which retains a second end of said leaf spring and which is stationarily fixed at a second end portion thereof to said casing;

stationary core means of magnetic material mounted in said casing and operatively engageable with said armature;

means acting on said stationary core means and said armature for rotating said armature toward said stationary core means whereby said valve is moved to said second position; and

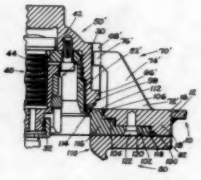
means connected to said casing and engaging said first end portion of said spring retainer for indirectly adjusting tensioning of said leaf spring.

4,397,444

TANK CAR BOTTOM OUTLET VALVE HAVING COMBINATION RING AND VALVE SEAT

Gunter R. Behle, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 12, 1980, Ser. No. 215,918
Int. Cl.³ F16K *27/03, 1/48*
U.S. Cl. 251—144 **15 Claims**



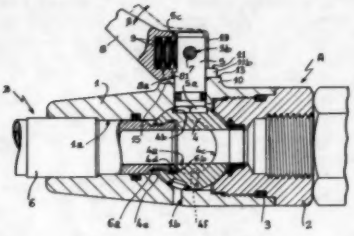
1. A tank car bottom outlet valve assembly comprising: a tank bottom having a tank bottom lower external surface; a mounting flange located within a bottom opening in said tank bottom; said mounting flange including a lower flange surface and an upper flange surface; said lower flange surface located below said tank bottom surface a distance not in excess of one (1) inch; said mounting flange including a valve seat slot; said valve seat slot including a slot first portion extending upwardly from said lower flange surface toward said upper flange surface; said slot first portion extending radially inwardly to a flange internal vertical surface at a level above said lower flange surface and below said upper flange surface; said slot including a second slot portion extending vertically along said flange internal vertical surface to said upper flange surface; said slot adapted to receive a removable valve seat member; said valve seat member including an internal valve seat portion located within said second slot portion and adapted to receive a valve closure movable between open and closed positions; a valve seat body portion located below said valve seat portion and supporting said valve seat portion; at least one valve seat flange portion extending radially outwardly from said valve seat body portion and being located within said slot first portion and including fastening means for holding the valve seat member in place within said mounting flange and for supporting said valve closure and any lading in the tank; said valve seat member and said valve closure being removable from the bottom by removing said fastening means without the attendant having to enter the tank.

4,397,445

SAFETY VALVE UNIONS

Jean-Luc Burquier, Veyrier du Lac, France, assignor to S.A. Des Etablissements Staubli, Faverges, France

Filed May 4, 1981, Ser. No. 260,454
Claims priority, application France, May 13, 1980, 80 11161
Int. Cl.³ F16L *37/28*
U.S. Cl. 251—149.9 **2 Claims**



1. In a safety valve union for connecting a downstream male element with a pressurized upstream female element, the union being of the type wherein the female element has in its body a rotary valve plug controlled by a maneuvering lever to rotate the plug selectively between open, closed, vented and release positions, an improved structure for locking the male and female elements together in certain positions of the valve plug, the structure comprising:

(a) said body of the female element having an upstream coupling and having a bore extending therefrom through a central bore portion which houses said rotary valve plug and therebeyond to a cylindrical bore which is shaped to receive said male element;

(b) said male element having a downstream coupling and having a bore extending therefrom through an elongated cylindrical portion shaped to enter said cylindrical bore of the female element, the cylindrical portion of the male element having a locking depression near its terminal end; and

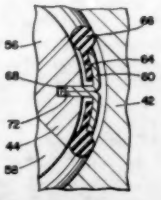
(c) the valve plug having a bore extending therethrough disposed to align with the bores of said elements in said open position, and the plug having within its bore lip means disposed when the plug is in said open and closed positions to engage in said depression and lock the elements together and located when the plug is in said release position to be disengaged from said depression to permit disconnection of said male element.

4,397,446

INTEGRAL SEAL

Jerry G. Jelinek, La Habra, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Oct. 25, 1977, Ser. No. 844,867
Int. Cl.³ F16K *5/18*
U.S. Cl. 251—309 **1 Claim**



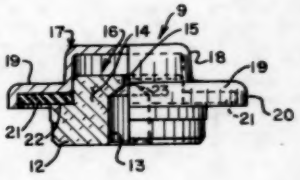
1. A valve comprising a housing having a cylindrical bore wall and a plurality of passages opening into said bore wall, a valve element having a cylindrical valve wall and a plurality of passages opening through said valve wall, said valve wall and said bore wall defining an annular cavity therebetween, said annular cavity having a substantially uniform radial width at all locations, a sealing device disposed in said cavity, said sealing device including a thin metallic cylindrical sleeve member, said sleeve member being of integral one-piece construction and having a substantially uniform radial wall thickness throughout its entire extent, said sleeve member being split along its entire longitudinal extent and having circumferentially facing side surfaces at the location of said split, a plurality of apertures extending radially through said sleeve, each of said apertures being aligned with one of said passages, each of said apertures being defined by a peripheral surface, said sleeve having an inner cylindrical surface and an outer cylindrical surface, one of said cylindrical surfaces being coated with a thin elastomeric sheath over substantially its entire extent, said sheath having a substantially uniform radial wall thickness terminating adjacent said peripheral surfaces; an elastomeric seal located adjacent each of said apertures and extending substantially coextensively with its respective peripheral surface, said elastomeric seals each having a radial wall thickness greater than the combined radial wall thicknesses of said sleeve and said sheath, said elastomeric seals each including one continuous uninterrupted sealing surface sealingly engaging said valve wall and another continuous uninterrupted sealing surface sealingly engaging said bore wall, said sheath and said seals being of integral one-piece construction, said sheath and said sleeve being spaced apart from said valve surface and from said bore surface at all locations away from said split, and said seals being the sole means of maintaining said spaced apart relationship, whereby said sheath and said sleeve do not frictionally engage said valve wall and said bore wall when said valve element is displaced relative to said housing.

4,397,447

POPPET VALVE MEANS

Arthur C. Fink, Jr., Lonedell, Mo., assignor to Husky Corporation, Pacific, Mo.

Filed Apr. 2, 1981, Ser. No. 250,167
Int. Cl.³ F16K *31/60*
U.S. Cl. 251—356 **6 Claims**



1. An improved poppet valve means for use in a fuel dispenser and of the type having a body portion incorporating an inlet for the fuel being pumped and a spout outlet for dispensing of the fuel, and a handle means actuating a stem for effecting an opening or closing of the poppet valve means from a valve seat during fuel dispensing, comprising, said poppet valve means having a base member, said base member formed having an upper segment and a lower segment, said base member having means for cooperating with the stem to render the base member responsive to movement of the stem, said poppet valve means having an upper portion incorporating a valve seal and with said upper portion mating with the base member and forming a chamber intermediate therewith, said upper portion of the poppet valve means disposed for substantially simultaneous movement with the shifting of its base member, means provided upon said base member to prevent disruption in the cooperation between the movements of the upper portion and the base member during actuation of the poppet valve

means during fuel dispensing, said means formed of the base member for cooperating with the stem movements comprising a cavity formed into the bottom of the said base member, said base member having an aperture therethrough to prevent the development of any vacuum and air cushioning between the said base member and its mating within the valve upper portion during shifting of the said poppet valve means between open and closed positions, and said vacuum preventing and fluid or air venting aperture formed in the base member extending from its said formed cavity and through the upper segment of the said base member and communicating with the formed chamber provided intermediate the upper portion of the valve means and the upper segment of the said base member that matingly fits therein.

4,397,448

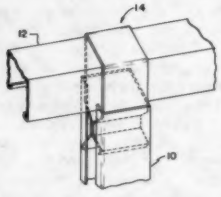
FENCE POST-TOP RAIL CONNECTOR

Michael J. Dillon, North Township, Lake County, Ind., assignor to U.S. Steel Corporation, Pittsburgh, Pa.

Filed Apr. 5, 1982, Ser. No. 365,075

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—65 **9 Claims**



1. A resilient connector for attaching a hollow first longitudinal member to a transverse longitudinal member, said connector comprising:

(a) a loop portion for receiving said transverse longitudinal member; and,

(b) leg portions extending from said loop portion for insertion into one end of said first longitudinal member and into yielding frictional engagement with the inner walls thereof, each of said legs further comprising

(i) a first inclined portion in which said legs extend inclinedly inward toward the axis of said connector; and,

(ii) a substantially parallel portion, said parallel portions of each leg being configured to engage one another when said legs are inserted into said first longitudinal member whereby the mutual engagement of said parallel portions enhances the resiliency of said legs and the frictional engagement thereof with the inner walls of said first longitudinal member.

4,397,449

APPARATUS FOR COOLING HOT-ROLLED WIRE RODS

Hiroshi Kaneda; Hiroshi Sato; Katsunori Nashimoto, and Tadashi Matsui, all of Kamaichi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 186,009, Sep. 10, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 362,841

Claims priority, application Japan, Sep. 13, 1979, 54-116678; Dec. 14, 1979, 54-161619; Dec. 14, 1979, 54-161620; Dec. 14, 1979, 54-161621; Dec. 14, 1979, 54-172267[U]; Dec. 24, 1979, 54-166907; Dec. 29, 1979, 54-172124; Dec. 29, 1979, 54-172125; Dec. 29, 1979, 54-181943[U]; Dec. 29, 1979, 54-181944[U]; Feb. 1, 1980, 55-10030

Int. Cl.³ C11D *9/64*

U.S. Cl. 266—106 **10 Claims**

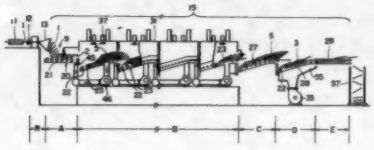
1. An apparatus for slow cooling a rod delivered from a hot rolling mill while transferring it, comprising:

a laying reel for forming the rod into successive rings;

a conveyor means having a coil receiving portion below the reel for receiving the rings and means for forming them into a packed coil having a plurality of overlapped rings with the centers of the rings offset and the edges of the cross-section of the coil being very densely packed together;

said conveyor having at least one step therein with the section of the conveyor downstream of the step lower than the section of the conveyor upstream of the step, said step being sufficiently high for passing the rings of the coil through a vertical drop for loosening the coil when it is conveyed over the step by making an opening between the preceding rings and the succeeding rings, and causing the succeeding rings to again come in contact with the preceding rings;

at least one enclosure for enclosing at least the step and the sections of said conveyor between which said step is located, and having a gaseous heat transfer medium therein;



at least one stirring fan attached to the ceiling of said enclosure for circulating the gaseous medium in said enclosure in order to maintain the gaseous medium at a substantially uniform temperature and circulating the gaseous medium over the exposed surfaces at the rings of the coil for removing heat from the rings by convection;

means for discharging the gaseous medium from the enclosure and introducing gas from outside which is at a temperature lower than the temperature of the gaseous medium in said enclosure and being in an amount sufficient for, together with the circulation of the gaseous medium, maintaining the gaseous medium at a substantially uniform temperature which is lower than the temperature of the coil at the inlet end of said enclosure for progressively reducing the temperature of the coil in the direction of movement of said conveyor.

4,397,450

ARRANGEMENT FOR SECURING PLATE-TYPE COOLERS IN METALLURGICAL FURNACES

Bruno Kämmerling, Dinslaken; Franz Meier, and Rainer Schmidt, both of Oberhausen, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,438

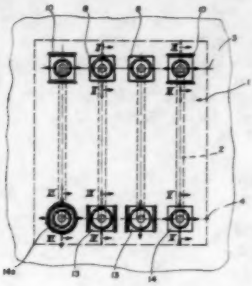
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100321

Int. Cl.³ F27B *1/24*

U.S. Cl. 266—193 **5 Claims**

1. An improved arrangement for securing plate-type coolers on an inside furnace shell of a metallurgical furnace, such as a blast furnace, the coolers being of the type having coolant conducting pipes extending through openings in the furnace shell, protective tubes being surrounded in spaced relationship about the pipes and extended into the cooler, and means for sealing the openings in the furnace shell to prevent gas escape, the improvement comprising at least one of the protective tubes spaced about a first coolant conducting pipe extending in a respective horizontal plane of the plate cooler being mounted to the shell as a fixed support, and the other protective tubes in the same plane being mounted to the shell as horizontally displaceable supports, and at least one protective tube extending in a second horizontal plane spaced about said first coolant

conducting pipe opposite to the fixed support being mounted to the furnace shell as a vertically displaceable support, and the



other protective tubes extending in the second plane being mounted to the shell as movable supports.

4,397,451

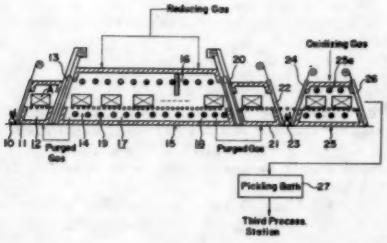
FURNACE FOR THE HEAT TREATMENT OF SCALE-COVERED STEEL

Keizo Kinoshita, Takatsuki; Koji Murakami, Settsu, and Hitoshi Ohta, Sakai, all of Japan, assignors to Chugai Ro Kogyo Co., Ltd. and O & K Company Ltd., both of, Japan

Division of Ser. No. 272,118, Jun. 10, 1981. This application Feb. 17, 1982, Ser. No. 349,662

Int. Cl.³ C21D *9/00*

U.S. Cl. 266—252 **2 Claims**



1. An apparatus for heat treating a hot-rolled steel work having scales formed thereon comprising:

a heat treating furnace including a charge vestibule, a heat treating zone and a discharge vestibule;

means for supplying to said heat treating zone a gaseous reducing atmosphere under which the steel work is cooled slowly at a rate of 10° to 20° C. per hour after the steel work has been heated to temperatures in the range of 650° to 770° C.; and

a heating furnace provided adjacent to said discharge vestibule of said heat treating furnace, and containing means for maintaining said steel work at temperatures in the range of 500° to 650° C. in an oxidizing atmosphere.

4,397,452

HYDRO-MECHANICAL STOP FOR A SHOCK ABSORBER

Norman G. Fouts, Middletown, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 28, 1980, Ser. No. 211,485

Int. Cl.³ B60G *13/00, 15/00;* F16F *9/48*

U.S. Cl. 267—8 R **20 Claims**

1. A hydraulic shock absorber characterized by:

a working cylinder;

a piston rod and a piston mounted thereon sized to be slideably received within said working cylinder and dividing said cylinder into jounce and rebound chambers;

an end closure closng one end of said working cylinder and having an opening to slideably receive said piston rod;

said piston having flow control means constructed to provide a restrictive fluid passage for the controlled flow of hydraulic fluid from one of said chambers to the other of said chambers when said piston is moved in said working cylinder to thereby create a dampening force;

an annular member coaxially mounted about said piston rod within said working cylinder;

said annular member having a flow control means constructed to provide a restricted fluid passage for the controlled flow of hydraulic fluid therethrough;

said annular member, working cylinder and said end closure defining an annular variable size compression stop chamber above said rebound chamber; and

said piston rod having means constructed to axially move said annular member within said working cylinder after a predetermined amount of compression stroke of said piston to increase the volume of said compression stop chamber and to provide hydraulic fluid to flow through the flow control means of said annular member to said compression stop chamber to create a dampening force near the compression end of the piston stroke.

4,397,453

SELF-TELESCOPING CARTRIDGE MAGAZINE SPRING

Lueder Seecamp, 487 Wolcott La., Orange, Conn. 06477

Continuation-in-part of Ser. No. 153,312, May 27, 1980, abandoned. This application Mar. 4, 1982, Ser. No. 354,896

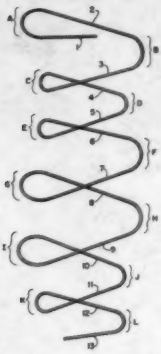
Int. Cl.³ F16F *1/04*

U.S. Cl. 267—180 **6 Claims**

1. A self-telescoping cartridge magazine spring comprising a plurality of alternating curved portions and straight sections disposed about the longitudinal axis of said spring,

said curved portions being of two different sizes with the

smaller disposed axially inward of the larger and occurring at various intervals lengthwise of said spring,



each transition from one size curved portion to the other occurring entirely within one of said straight sections.

4,397,454

DEVICE FOR HOLDING A SLIDER FOR A SLIDE FASTENER

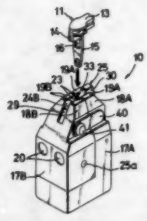
Toshiaki Nakagawa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Apr. 7, 1982, Ser. No. 366,360

Claims priority, application Japan, Apr. 11, 1981, 56-51454[U]

Int. Cl.³ B23P 19/04

U.S. Cl. 269—49 **3 Claims**



1. A device for holding a slider in position for threading onto a slide fastener chain, the slider including a slider body, a yoke mounted on the slider body, and a pull tab pivotally connected to the yoke and having an opening, said device comprising:

(a) a housing having a horizontal support surface for supporting thereon the slider body upside down, and a vertical slit opening into said support surface for receiving the pull tab hanging from the slider body supported on said support surface;

(b) a lever pivotally mounted in said housing and having a pair of juxtaposed arms disposed one on each side of said slit, one of said arms having a locking projection extending toward and terminating short of the other arm, said lever being pivotable between a slider-holding position in which said locking projection projects into said slit for engagement with an edge of the opening of the pull tab, and a slider-release position in which said locking projection is retracted out of said slit for releasing the pull tab, said other arm extending beyond said one arm to such an extent that as the slider is placed on said support surface, said other arm is pressed downwardly by the yoke of the slider to cause said lever to be pivotally moved from said slider-release position to said slider-holding position; and

(c) means urging said lever to either said slider-holding position or said slider-release position.

4,397,455

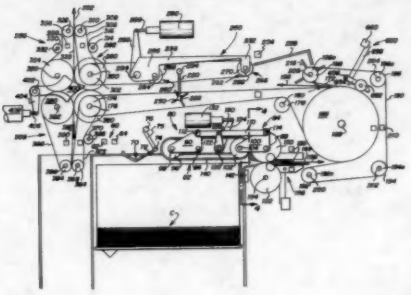
DOCUMENT DISPENSER WITH ESCROW SYSTEM

Richard C. Hickey, Plano, Tex., assignor to Docutel Corporation, Irving, Tex.

Filed Feb. 4, 1977, Ser. No. 765,827

Int. Cl.³ B65H 5/22

U.S. Cl. 271—3.1 **19 Claims**



1. Apparatus for dispensing documents from a storage location to a discharge area, comprising in combination:

means for transporting doucments from the storage location along a transport path,

means for continously positioning documents in the storage location to the transport path as documents are transported therefrom,

means responsive to said positioning means for stopping the dispensing when the storage location is empty.

a collection station at the end of the transport path and displaced laterally therefrom, said collection station including:

first means immediate the end of the transport path for displacing the trailing edge of a document from the transport path into the collection station,

second means at the opposite end of the collection station from said first means for displacing the leading edge of a document delivered from the transport path into the collection station, and

means for moving documents at the collection station to the discharge area.

4,397,456

APPARATUS FOR SEPARATION OF A STACK OF FOLDED OR BOUND, MULTI-SHEET PRINTED PRODUCTS

Jürg Eberle, Hinwil, Switzerland, assignor to Ferag Ag, Hinwil, Switzerland

Filed Apr. 28, 1981, Ser. No. 258,542

Claims priority, application Switzerland, May 12, 1980, 3688/80

Int. Cl.³ B65H 3/04

U.S. Cl. 271—10 **23 Claims**

1. An apparatus for the separation of a stack of folded or bound, multi-sheet printed products, especially newspapers and periodicals, comprising:

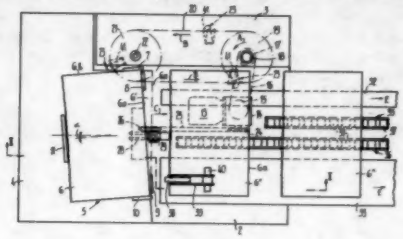
withdrawal means for engaging at the lowermost product of the stack and for pulling such out from below the stack;

means for retaining the remaining products within the stack while the lowermost product is being withdrawn from the stack;

said withdrawal means comprising at least one entrainment element;

means for moving said at least one entrainment element along a predetermined path of travel;

said entrainment element during its movement being first inserted at a side of the lowermost product between sheets of such product, which side merges with an engageable edge of the product, then said entrainment element coming to bear against said engageable edge of the product, and thereafter being movable essentially in the direction of a predetermined product removal direction, thereby



pulling the lowermost product from below the stack at a region of the engageable edge; and

said withdrawal means further including a product removal device which engages the lowermost product at the region of the engageable edge which has been pulled out from below the stack by the entrainment element and which moves the engaged product in said product removal direction.

4,397,457

SHEET FEEDING APPARATUS

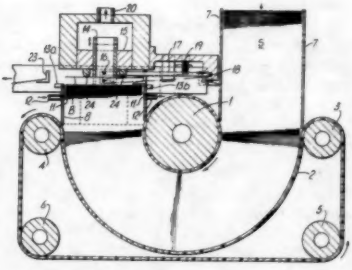
Dennis Hinchcliffe, and Desmond W. Molins, both of London, England, assignors to Molins Limited, London, England

Filed Jun. 1, 1981, Ser. No. 268,926

Claims priority, application United Kingdom, Jun. 11, 1980, 8019121

Int. Cl.³ B65H *3/08, 1/14*

U.S. Cl. 271—12 **7 Claims**



1. Apparatus for removing sheets singly from a stack of a plurality of sheets, in particular hinged-lid blanks for cigarette packets; comprising feed means for feeding the stack with its upper end exposed in an upward direction, said feed means comprising a pair of conveyors disposed at opposite sides of said stack, each having a plurality of corresponding stack supporting members which are disengageable from said stack as said stack is fed upwardly; a substantially vertically reciprocable suction member engageable with each successive topmost sheet at said upper end to lift said sheet clear of the other sheets in said stack; and withdrawal means for withdrawing each sheet transversely from said suction member while in its lifted position.

4,397,458

SUCTION-TYPE INSERTER FOR PICKING UP AND TRANSPORTING NON-RIGID SHEETS

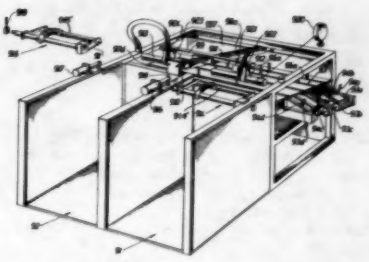
Lars G. Edström, Stockholm, Sweden, assignor to Malmöhus Invest AB, Malmö,, Sweden

Division of Ser. No. 9,953, Feb. 6, 1979, Pat. No. 4,349,189. This application Oct. 31, 1980, Ser. No. 202,639

Claims priority, application Sweden, Feb. 7, 1978, 7801396; Feb. 7, 1978, 7801397; Feb. 7, 1978, 7801398; Feb. 7, 1978, 7801399; Jun. 15, 1978, 7806910

Int. Cl.³ B65H *3/08, 5/08*

U.S. Cl. 271—14 **1 Claim**



1. In an inserter for picking, transportation and depositing of non-rigid sheet-like or folded material one at a time from a material bundle to a depositing station, the improvement comprising:

at least one reciprocatingly movable suction head **(912,913)** mounted relative to said material bundle so as to be operable at a given level, and being reciprocatingly movable in only one plane from a first position in said one plane above said material bundle but proximal to that end part of said material bundle located nearest to a depositing station to a second position in said one plane at said depositing station and back again to said first position for transport of said material;

means for imparting said reciprocating movement to said at least one reciprocatingly movable suction head **(912,913)** in said only one plane;

at least one prelifter **(914,915)** having a suction head and being mounted adjacent said material bundle to pick up at least the end portion of one material at a time from said material bundle to move at least said end portion of the picked-up material to said given level at which said at least one reciprocatingly movable suction head **(912)** operates; and

said suction head of said at least one prelifter meeting said at least one reciprocatingly movable suction head at said given level and at said first position at the same time.

4,397,459

APPARATUS FOR DETECTING THE FLOTATION LEVEL IN AN AIR SUPPORTED SHEET SEPARATING AND FEEDING DEVICE

Morton Silverberg, Penfield; John M. Browne, Victor, and Dale W. Young, Chili, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 16, 1981, Ser. No. 244,437

Int. Cl.³ B65H *3/12, 3/48*

U.S. Cl. 271—94 **17 Claims**

1. An apparatus for separating and feeding sheets, in seriatim, from a stack, including:

means for supporting a stack of sheets;

means for directing a flow of pressurized fluid between the stack and said supporting means;

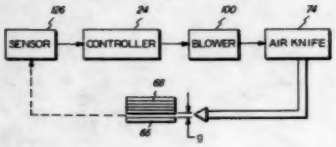
means for moving the stack against the influence of gravity from a first position to a second position and measuring

the time for the stack to return to the first position from the second position under the influence of gravity; and

means, responsive to the measured time, for controlling said directing means to regulate the pressure of the fluid flowing between said supporting means and the stack.

4. An apparatus for separating and feeding sheets, in seriatim, from a stack, including:

means for supporting a stack of sheets;



means for directing a flow of pressurized fluid between the stack and said supporting means to create a gap between said stack and said supporting means;

means for directing light rays between the stack and said supporting means in the gap;

means of sensing the light rays transmitted through the gap; and

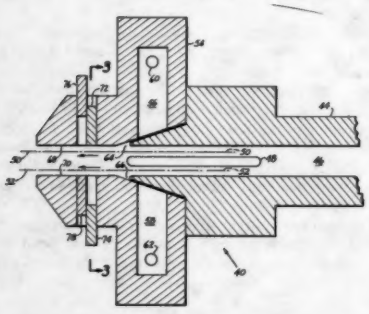
means, responsive to the sensed light rays, for controlling said directing means to regulate the pressure of the fluid flowing between said supporting means and the stack.

4,397,460

OVERLAPPED DOCUMENT DETECTOR

Eddy J. Milanes; Russell E. Highbridge, both of Oklahoma City, and Robert S. Morgan, Yukon, all of Okla., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Jul. 6, 1981, Ser. No. 280,756
Int. Cl.³ B65H *7/12, 7/14*
U.S. Cl. 271—263 **8 Claims**



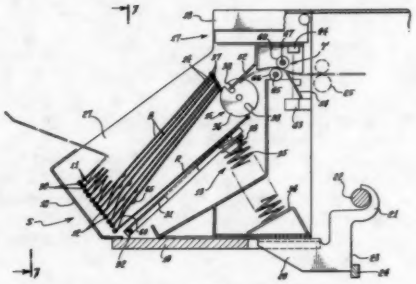
1. An overlapped document detector for detecting documents in each of two paths along which documents may travel in a document handling machine comprising, in combination, first and fourth radiant sensor means focused to receive radiation reflected from opposite sides of a document in a first of said paths, and second and third radiant sensor means focused to receive radiation reflected from opposite sides of a document in a second of said paths, said first radiant sensor means being so disposed and arranged adjacent said second path as to receive radiation reflected from documents in said first path only when no document is present in said second path, and said third radiant sensor means being so disposed and arranged adjacent said first path as to receive radiation reflected from documents in said second path only when no document is present in said first path; first gate preparation means responsive to said first and second radiant sensor means for providing a first gate signal; second gate preparation means responsive to said third and fourth radiant sensor means for providing a second gate signal; and gate means responsive to said first and second gate signals for providing a signal indicative of an overlapped document condition.

4,397,461

SORTING MACHINE

R. Clark DuBois, Fairfield, and John C. Hamma, Bridgeport, both of Conn., assignors to Gradco/Dendoki, Inc., Santa Ana, Calif.

Filed Oct. 21, 1981, Ser. No. 313,602
Int. Cl.³ B65H *39/11*
U.S. Cl. 271—293 **10 Claims**



1. An improved sorting apparatus comprising:

a frame structure; a plurality of bin members pivotally mounted on said frame structure at one end of said bin members; means for successively pivotally moving the other ends of said bin members between first and second positions at which said other ends of said bin members are above and below a sheet entry location and in closely spaced relation and widely spacing successive bin members at said entry location; said from structure including a rear support wall and an open front wall; drive means on said rear wall; a rotary bin shifting member driven by said drive means and having a recess to engage and pivotally move successive bin members upon rotation in either direction; said bin members having trunnions engageable with said bin shifting member to be widely spaced at said entry location, and spring means to bias said bin members toward said bin shifting member in at least an upward direction.

4,397,462

PNEUMATIC EXERCISING DEVICE

Russell F. Wilmarth, 185 Oakdale Ave., Manchester, N.H. 03103

Filed Jun. 26, 1981, Ser. No. 277,930
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—130 **6 Claims**

1. A pneumatic exercise device comprising:

a. a frame having a base supporting an upright elongate hollow support member which support member has therein an integral airtight accumulator of fixed capacity;

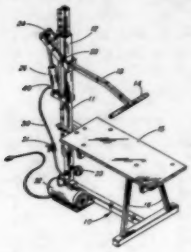
b. an external bracket supported by said support member and being adjustable in position along the length thereof;

c. a lever arm pivotally mounted to said bracket for rotation thereabout in a plane of the longitudinal axis of said support member, one end of said lever having means to be grasped by the user of said device;

d. a pneumatic cylinder including a piston and piston rod, one end of which cylinder is pivotally mounted to said lever arm and acts thereagainst, the capacity of said pneu-

matic cylinder being less than 1/30th of the capacity of said airtight accumulator;

e. a length of flexible conduit connecting the compression slide of said pneumatic cylinder with said accumulator; and



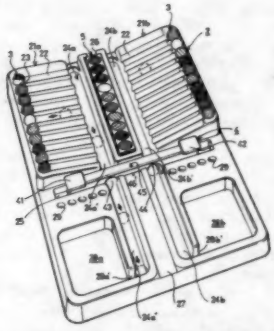
f. a pump adapted to compress and admit ambient air to said accumulator and permitting the pressure in such accumulator to be controllably increased.

4,397,463

BALL GAME

Ivan Moscovich, 19 Elkachi St., Afek-Ramat Aviv, Israel

Filed May 12, 1982, Ser. No. 377,521
Int. Cl.³ A63F 7/02
U.S. Cl. 273—1 GE 10 Claims



1. A game adapted to be played by a plurality of players, comprising:

a set of balls for each player, each set including a like plurality of balls each visually distinguishable from the others of the set;

a set of inclined chutes for each player, each set including one chute for each ball of the set and being formed to stably support one of such balls at the upper end of the chute;

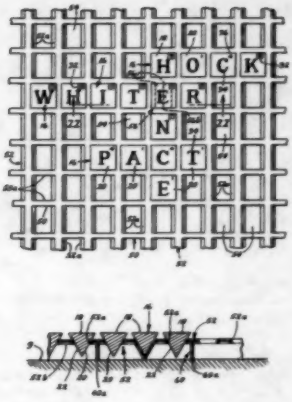
and an inclined passageway for each set of chutes, each passageway including an inclined higher-elevation section at one end adjacent to and communicating with the lower ends of all the chutes in the respective set, and an inclined lower-elevation section at the opposite end, such that the balls of the respective set may roll by gravity down their chutes in a parallel manner to said higher-elevation section of the respective passageway, and from there in a serial manner to said lower-elevation section of the respective passageway.

4,397,464

COLLAPSIBLE BASKETBALL GOAL APPARATUS

Frank R. Krag, Newburgh, Ind., assignor to Indian Industries, Inc., Evansville, Ind.

Filed Sep. 3, 1981, Ser. No. 299,295
Int. Cl.³ A63B 63/08
U.S. Cl. 273—1.5 R 5 Claims



1. A collapsible basketball goal apparatus which comprises:

a backboard adapted for mounting on a suitable support;

a basketball hoop adapted for carrying a basketball net;

mounting means for mounting said hoop to said backboard to have a first position with said hoop in a horizontal condition and a second position with said hoop displaced downwardly from the first position, said mounting means including a backboard bracket, a lower support member and an upper support member including an aperture, the backboard bracket being secured to said backboard, the lower support member being attached to said hoop and further being hingedly attached to the backboard bracket about a horizontal axis parallel with said backboard at a first location, the upper support member being attached to said hoop;

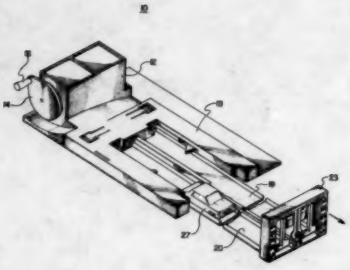
said mounting means further including an attachment means for attaching the upper support member to said backboard, the attachment means including a post member mounted to said backboard bracket extending perpendicularly from said backboard and received through the aperture in the upper support member, the post member including an aperture extending parallel with said backboard; and

release means for releasing said hoop from the first position to the second position in response to a predetermined downward force upon said hoop, said release means including a shear member extending through the aperture in the post member and being positioned to be sheared by movement of said hoop from the first position to the second position upon application of the predetermined downward force, said release means being for releasing the upper support member from said backboard and for releasing said hoop from the first position to the second position by shearing of the shear member.

4,397,465
FLEXIBLE STRIP WITH ROLLING AND BENDING MEANS

Derek J. Gable, Rancho Palos Verdes, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 19, 1981, Ser. No. 312,580
Int. Cl.³ A63F 9/14, 18/02; B29C 17/02
U.S. Cl. 273—86 D 7 Claims

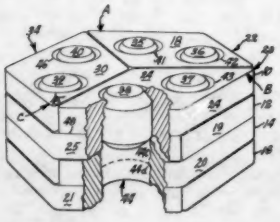


1. A track for a toy vehicle comprising a strip of flexible material having a pair of bending lines running parallel to its length, a roller attached to one end of the strip, means for bending the strip along the lines at an angle to the main body of the strip to form curbs along the strip to contain a toy vehicle, means for drawing said strip away from said roller and bending means, and means mounting said roller and said bending means in fixed spaced relation whereby said strip may be drawn through said bending means toward and away from said roller.

4,397,466
DISK PUZZLE

Frank Nichols, 3250 N. Hall, Dallas, Tex. 75204

Filed Sep. 14, 1981, Ser. No. 301,831
Int. Cl.³ A63F 9/12
U.S. Cl. 273—156 34 Claims



1. A puzzle comprising:

at least two separate puzzle pieces which are interfittable to form an integral piece having a predetermined configuration;

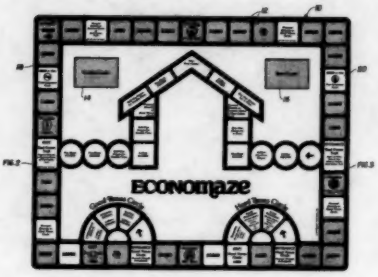
each of said puzzle pieces including surface markings similar in appearance to the interfitting surfaces of said puzzle pieces to disguise the interrelationship of said puzzle pieces; and

at least one slidable insert member which is slidably movable through apertures extending through said puzzle pieces when aligned in the predetermined configuration, said insert member being movable between a plurality of different positions relative to said puzzle pieces, said insert member having at least one position which enables said puzzle pieces to be moved apart from one another and said insert member having a plurality of positions which prevent said puzzle pieces from being moved from the predetermined configuration.

4,397,467
COMPETITIVE BOARD GAME

James H. Thornton, R.R. 2, Box 14, Millstadt, Ill. 62260

Continuation of Ser. No. 77,687, Sep. 21, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 301,916
Int. Cl.³ A63F 3/00
U.S. Cl. 273—256 3 Claims



1. A competitive game wherein:

(a) each player in the game plays with at least one of a plurality of differentiated tokens;

(b) there are a plurality of money markers and property items having predetermined values;

(c) the game is played on a game board having a primary path of stations around the perimeter and three alternate paths, over which tokens are moved during play, said primary path comprising a plurality of stations which are either instructional or color coded and whereby the instructional stations direct that a player will:

(i) receive an insurance card or money marker or;

(ii) be directed to or remain on the instructional station that is the entrance to an alternate path entitled Real Estate Trail or;

(iii) be directed to or immediately proceed through the alternate path entitled Good Times Circle wherein the player may receive a large bonus or;

(iv) be directed to or immediately proceed through the alternate path entitled Hard Times Circle wherein all other players property items and cash markers may be lost and,

whereby the color coded stations direct that a player immediately complete the three following sequential steps in the order indicated:

(v) collect money markers or property items from the bank in the amount indicated by the instructions correlated with that station;

(vi) buy or sell any number (including zero) up to a predetermined maximum of property items; and

(vii) refer to the next in sequence of a plurality of randomly arranged instructional members which are independent of said stations but which are correlated to the station color code and,

whereby none of the instructional or color coded stations may ever be purchased or owned by players and none of the instructional or color coded stations of the primary playing path have any form of landing fees payable either to other players or the bank;

(d) on said primary path each player receives a predetermined value in money markers or property items during every turn except when landing on the instructional station entitled Entrance Real Estate Trail;

(e) there are a plurality of first instructional members which are independent of said stations but which are correlated

with instructions that favorably affect the standing of a player in that at least one of said first instructional members make it advantageous to own each category of property items and several of said first instructional members make it advantageous to gamble with other players when that instructional member is referred to;

(f) there are a plurality of second instructional members which are also independent of said stations but which are correlated with instructions that adversely affect the standing of a player in that at least one of said second instructional members makes it disadvantageous to own each category of property items and several of said second instructional members make it disadvantageous to gamble with other players when that instructional member is referred to;

(g) the standing of each player in the game is evidenced by his accumulation of money markers and property items having predetermined values; and

(h) the winner of the game is determined by the accumulation of a predetermined value in money markers, declaring said accumulation to the other players and thereafter arriving at a predetermined station,

said competitive game comprising the steps of:

(i) determine the number of stations moved by each token on each play by aleatoric means;

(j) move the token to the station determined in step (i) and take the following actions in the order indicated as required;

(i) transfer money markers or property items with the bank in the amount indicated by the instruction correlated with that station;

(ii) buy or sell any number (including zero) up to a predetermined maximum of a predetermined number of categories of property items, whereby said property items may be bought and sold in anticipation of which instructional members will be referred to;

(iii) refer to the next in sequence of a plurality of randomly arranged instructional members which are correlated to the color coding of the station on which a token has landed but which are independent of said stations but which are likewise correlated with instructions affecting the standing of a player;

(iv) when authorized or directed to do so by an instructional member referred to pursuant to step (j) (iii), sell to the bank property items at increased value or turn in to the bank property items at decreased values or pay penalties to the bank for owning specific property items or transfer property items to appropriate player;

(v) when authorized to do so by an instructional member referred to pursuant to step (j) (iii), bet any value in money markers (including zero) against each player up to the total value in money markers (not including the value of property items) that player has;

(vi) engage in the specific gambling game depicted on the instructional member and determine the winner of the bets made pursuant to step (j) (v) by aleatoric means;

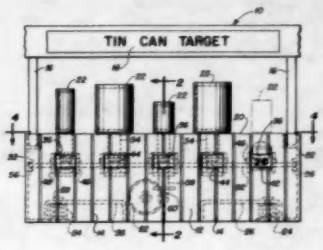
(vii) when authorized to do so by an instructional member referred to pursuant to step (j) (iii), all other players bet against the player who has been referred to the instructional member any value in money markers (including zero) up to the total value of money markers and property items held by the player who has been referred to the instructional member; and

(viii) engage in the specific gambling game depicted on the instructional member and determine the winner of the bets made pursuant to step (j) (vii) by aleatoric means.

4,397,468
SIMULATED TIN CAN TARGET GAME

Bruce M. D'Andrade, Whitehouse Station, N.J., and Johnny S. C. Yuen, Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Apr. 30, 1982, Ser. No. 373,424
Int. Cl.³ F41J 1/00, 5/00
U.S. Cl. 273—381 **4 Claims**



1. A simulated tin can target game comprising in combination a panel structure resembling the front of a shooting target gallery and having a front panel arranged to be positioned vertically by support members, a row of simulated target cans spaced apart transversely in a row adjacent the upper edge of said front panel, an arm extending downward from each simulated target can below the upper edge of said front panel, transverse pins on said arms supported pivotally relative to said front panel, a score indicating panel connected to the lower end of each of said arms and disposed at an angle thereto, score-viewing openings in said front panel respectively aligned with each target can below the upper edge of said front panel, said score-indicating panels being positioned relative to said arms in such manner that when a target can is struck by a shot or thrown object it will pivotally move rearward and downward and cause the score-indicating panel of said target can to be disposed for viewing the score indication thereof through the viewing opening aligned with said target can, an audible signal member supported rearwardly of said front panel, a striker on an elongated flexible member depending from a support pivot on the rear side of said front panel and provided with a projection on the upper end of said member, and a cam member on the arm of at least one target can operable to engage said projection on said flexible member when a target can is moved rearward from a hit to flex said flexible member in a manner to energize it to cause the striker thereon to hit the audible member as the cam member moves past said projection and disengages it, thereby to supplement the showing of the score value displayed in one of said openings aligned with the target can that has been hit by a projectile.

4,397,469
METHOD OF REDUCING PREDICTABILITY IN CARD GAMES

Bartus Carter, III, P.O. Box 22, Pomona, N.J. 08240

Filed Aug. 2, 1982, Ser. No. 404,393
Int. Cl.³ A63F 1/00
U.S. Cl. 273—149 R **14 Claims**

1. The method of reducing the predictability in card games in which each successive round of play utilizes cards from a stack of unplayed cards while played cards are segregated and not returned to the stack after each round of play, which method comprises:

(a) interrupting play at such time as the aggregate of played cards approximates and prior to the time said aggregate significantly exceeds a value of about n/d, where n equals the total of all cards, played and unplayed, and d is an integer of from 2 to 20;

(b) shuffling said played cards;

(c) dividing at least some of said shuffled, played cards into

x number of roughly equivalent or nonequivalent groups where x is an integer having a value of at least 2; and

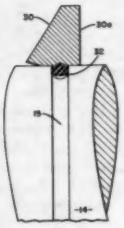
(d) returning one of said groups of cards to said stack of unplayed cards at the point most distal from the unplayed card which was to be played prior to said interruption of play and returning each of the remaining said groups to a different point in said stack of unplayed cards, each of said points being removed from the unplayed card which was to be played prior to said interruption of play, and being further removed from any other point at which another group is returned, by at least one card.

4,397,470

OIL SLINGER AND METHOD OF MOUNTING

Alexander A. Carroll, Greensburg, and William F. Hannan, III, Pittsburgh, both of Pa., assignors to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Aug. 3, 1981, Ser. No. 289,669
Int. Cl.³ E21B *33/00*; B61F *15/22*; B23D *11/02*
U.S. Cl. 277—1 **4 Claims**



3. A method for removably mounting an oil slinger on a rotatable shaft including the steps of

moving an annular oil slinger along a shaft until an O-ring is encountered;

forcing the slinger over the O-ring;

receiving the O-ring is a recess in the slinger in a detent action; and

rotating the shaft whereby the O-ring forms a fluid seal with the slinger so that oil migrating along the shaft is forced to travel onto said slinger and is discharged therefrom by centrifugal force.

4,397,471

ROTARY PRESSURE SEAL STRUCTURE AND METHOD FOR REDUCING THERMAL STRESSES THEREIN

Paul S. Feldman, Morrow; Joseph C. Burge; Michael A. Radomski, both of Cincinnati, all of Ohio, and Robert P. Tameo, Peabody, Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 2, 1981, Ser. No. 298,716
Int. Cl.³ F10D *5/18*; F02C *7/12*
U.S. Cl. 277—27 **8 Claims**

1. A rotating seal assembly comprising:

(a) a rotating segment comprising:

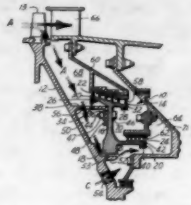
(i) a substantially conical shaped member having an outer surface;

(ii) a substantially cylindrical arm extending from said outer surface, said arm having a flange at the distal end thereof; and

(iii) a substantially cylindrical shelf extending from said outer surface;

(b) a substantially disc shaped segment having a seal portion disposed around the outer circumference and a bore in the central portion thereof;

(c) means for attaching said disc shaped segment to said flange with the circumference of said bore positioned in predetermined spaced relation with respect to said shelf forming a gap therebetween; and



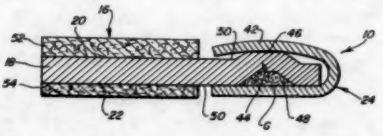
(d) a substantially closed cavity formed by at least a portion of said rotating segment and a portion of said disc segment.

4,397,472

CYLINDER HEAD GASKET WITH EXPANDED GRAPHITE FILLER

Daniel E. Czernik, Hinsdale, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed Nov. 12, 1982, Ser. No. 440,977
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—235 B **10 Claims**



1. An improved cylinder head gasket assembly for an internal combustion engine adapted to be positioned between an engine head and an engine block, said gasket assembly defining at least one combustion opening, said gasket assembly comprising:

a main body portion comprising a central metallic core having first and second main surfaces and composite facing layer on each of said main surfaces and overlying the substantial majority of each of said surfaces,

said central metallic core defining said combustion opening and said facing layers being spaced away from said combustion opening and defining zones surrounding said combustion opening essentially devoid of facing layers,

an annular embossment in said core surrounding said combustion opening intermediate said combustion opening and said facing layers, said embossment comprising an annular projection extending outwardly of one main core surface and an annular recess extending inwardly of said other main core surface, and

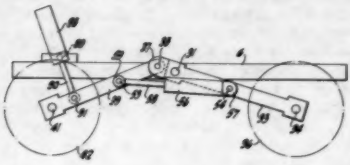
compressible, flexible expanded graphite disposed in and at least partially filling said annular recess,

whereby when said gasket assembly is disposed and compressed between an engine head and an engine block, said embossment is compressed and said flexible expanded graphite is compressed to effect a seal in the zone of the embossment between said head and said block to minimize leakage and enhance the sealing effect of the gasket assembly at said combustion opening and to minimize degradation of the seal effected thereat.

4,397,473
ROUGH TERRAIN VEHICLE

John A. Miles; James W. Rumsey, and James J. Mehlschau, all of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 18, 1981, Ser. No. 293,972
Int. Cl.³ B60G 17/00
U.S. Cl. 280—6 H 4 Claims

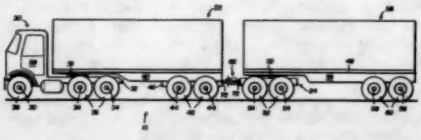


1. A rough terrain vehicle comprising a frame extending forwardly and rearwardly, a left-rear trailing arm, means for pivotally connecting said left-rear trailing arm at the forward end portion thereof to said frame for rotation about a first transverse axis, a left-rear ground engaging wheel mounted on the rear end of said left-rear trailing arm, a left-front supporting arm, means for pivotally connecting the trailing end portion of said left-front supporting arm onto said left-rear trailing arm for rotation about a second transverse axis longitudinally spaced from said first transverse axis, a left-front ground engaging wheel mounted on the forward end portion of said left-front supporting arm, a left-front double acting hydraulically expansible chamber interconnected between said left-front supporting arm and said frame, a right-rear trailing arm, means for pivotally connecting said right-rear trailing arm at the forward end portion thereof to said frame for rotation about said first transverse axis, a right-rear ground engaging wheel mounted on the rear end portion of said right-rear trailing arm, a right-front supporting arm, means for pivotally connecting the trailing end portion of said right-front supporting arm on said right-rear trailing arm for rotation about said second transverse axis, a right-front ground engaging wheel mounted on the forward end portion of said right-front supporting arm, a right-front double acting hydraulically expansible chamber interconnected between said right-front supporting arm and said frame, a first double acting hydraulically expansible side chamber pivotally connected at opposite ends to said left-front supporting arm and said left-rear trailing arm, a second double acting hydraulically expansible side chamber interconnected between the right-front supporting arm and the right-rear trailing arm, a hydraulic pressure source and tank on said frame, hydraulic conduits on said frame for variously interconnecting said double acting expansible front chambers and side chambers to said source and to said tank, and manually controllable valving for controlling said conduits.

4,397,474
STEERING STABILIZER AND QUICK COUPLING ASSEMBLY

Bert J. Mettetal, Tecumseh, Mich., assignor to Truck Safety Systems, Inc., Tecumseh, Mich.

Filed May 4, 1981, Ser. No. 259,884
Int. Cl.³ B62D 53/06
U.S. Cl. 280—423 A 11 Claims

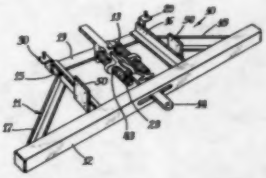


1. A trailer assembly adapted to be transported by a tractor comprising a lead trailer having front and rear frame portions, said front frame portion of said lead trailer being adapted to be pivotally connected to the tractor, a rear trailer having front and rear frame portions, a steerable towing vehicle located under the front frame portion of said rear trailer, said rear trailer being pivotally connected to said steerable towing vehicle, a steering stabilizer and quick coupling assembly pivotally connected at one end to said rear frame portion of said lead trailer and pivotally connected at its other end to said steerable towing vehicle, said steering stabilizer and quick coupling assembly including a drawbar member having one end pivotally connected to the rear frame portion of said lead trailer for movement only about a first horizontal axis and a coupler assembly having one end pivotally mounted to said steerable towing vehicle for movement only about a second horizontal axis, releasable means for pivotally connecting said drawbar member to said coupler assembly for movement about a vertical pivot axis whereby said steering stabilizer and quick coupling assembly provides rollover stability from said lead trailer to said rear trailer and permits quick coupling and uncoupling between said lead trailer and said rear trailer, said drawbar member including a vertical pivot pin forming said vertical pivot axis between said drawbar member and said coupler assembly, means for mounting said pivot pin to said drawbar member, said mounting means permitting limited universal movement of said pivot pin on said drawbar member and said releasable means being mounted to said coupler assembly for selective coupling and uncoupling with said vertical pivot pin.

4,397,475
BUMPER HITCH WITH UNIVERSAL MOUNTING SUPPORT

William J. Dietrich, Sr., Congerville, and Michael G. Kovach, Morton, both of Ill., assignors to DMI, Inc., Goodfield, Ill.

Filed Jan. 27, 1982, Ser. No. 343,166
Int. Cl.³ B60D 1/00
U.S. Cl. 280—495 12 Claims



1. A trailer hitch apparatus adapted to mount to the frame of a vehicle for towing a trailer comprises:

a hitch frame;

a rear mounting bracket means including securing means, said bracket means being adapted to be secured to said hitch frame and said vehicle frame by securing means;

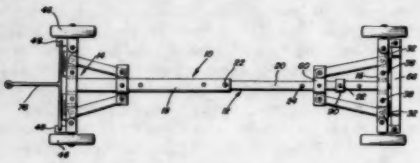
towing means affixed to said hitch frame for receiving said trailer;

at least one forward brace means having an extendable abutment surface and including mounting means, said forward brace means adapted to be mounted to one of said frames by said mounting means, said abutment surface adapted to be extended to engage the opposite frame to spread towing loads over a greater portion of said vehicle frame.

4,397,476
COLLAPSIBLE TRAILER

Philip B. Bolyard, and Patricia A. Bolyard, both of 1408 18th Ave., NW., Minot, N. Dak. 58701

Filed Feb. 10, 1981, Ser. No. 233,127
Int. Cl.³ B62D *63/06*
U.S. Cl. 280—656 8 Claims

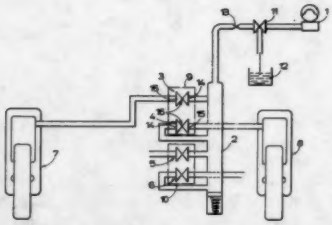


1. A collapsible trailer including an elongated central structural component, a pair of transverse structural members mounted to the opposite ends of said central structural component, a pair of support arms including base and free ends pivotally attached at the base ends thereof to the opposite ends of each transverse structural member for swinging about upstanding axes between extended positions with their free ends projecting outwardly of the corresponding transverse structural member end, and folded positions closely paralleling said central component and projecting toward the remote end of the central component, a wheel spindle pivotally supported from the free end of each arm for angular displacement between a first position with said spindle generally paralleling the corresponding arm and a second position with the spindle disposed at generally right angles relative to the corresponding arm, said support arms being swingable between said folded and extended positions independent of angular displacement of said wheel spindle relative to said support arms, means releasably connected between said support arms and shiftable along said central structural member for selectively releasably securing said support arms in said extended positions and folded positions.

4,397,477
HIGH PRESSURE HYDRAULIC SYSTEMS

Anthony W. Harrison, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 6, 1981, Ser. No. 251,705
Claims priority, application United Kingdom, Apr. 19, 1980, 8012972
Int. Cl.³ F16K *31/02*
U.S. Cl. 280—709 11 Claims

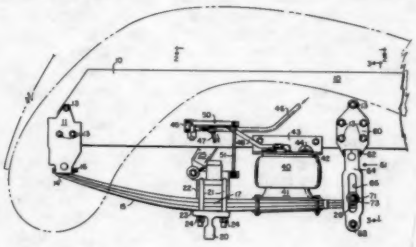


1. A high pressure hydraulic system comprising a source of high pressure fluid, a slave unit and a control valve assembly, fluid from said source being supplied to said slave unit through said control valve assembly which is operative to maintain said slave unit in a desired condition, said control valve assembly having first and second ports, said first port communicating with said source and said second port communicating with said slave unit, a valve member movable between a first closed position in which said valve member closes said first port, a second closed position in which said valve member closes said second port, and an open position in which communication between said first and second ports is permitted, movement of said valve member being controlled by forces produced by a first means comprising a solenoid assembly associated with each port, by a second means comprising means for applying a pressure differential across said valve member and by a third means comprising means for causing fluid flow past said valve member, said forces produced by energisation of said solenoid assemblies being of predetermined values, such that when a solenoid assembly of said first means is energized and said second means produces a force which opposes and exceeds the predetermined value of the solenoid force, said first means is unable to move said valve member, and said control valve assembly also having an elastomeric sealing means to provide a substantially leakproof seal at least when said valve member closes said first port.

4,397,478
LOW-FREQUENCY-RATE SPRING SUSPENSION SYSTEM FOR A WHEELED VEHICLE

James R. Jensen, Sunol, and David W. Deacon, Newark, both of Calif., assignors to PACCAR Inc., Bellevue, Wash.

Filed Apr. 3, 1981, Ser. No. 350,593
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—711 1 Claim



1. A low-frequency-rate spring syspension system for a wheeled vehicle having a frame with a first spring bracket, comprising:

a second spring bracket secured to said frame and having guide means depending therefrom providing a pair of laterally spaced walls an upper and lower limit means,

an axle,

a metal leaf spring having one end shackled directly to said first bracket, a central portion secured to said axle, and a second end extending through said guide means in between said laterally spaced walls and between said upper and lower limits, said second spring end being free from attachment to said guide means and to said second bracket so that no vertical load is transmitted therebetween while lateral alignment is maintained,

said guide means comprising

a pair of side walls each having a vertical elongated slot, a lower sleeve between them, said second spring end lying thereabove, and a roller having ends mounted in said vertical slots for free vertical movement therealong, said roller being located above said spring's second end,

an air spring secured to and between said frame and said leaf spring in between said second end and said central portion, said air spring thereby being offset from said axle, and

height-control means for controlling the height of said air spring so that said second end is ordinarily prevented from making contact with said second bracket,

whereby said leaf spring positions the air spring relative to said axle and provides roll resistance, while said air spring and the leaf spring are in parallel, the air spring carrying

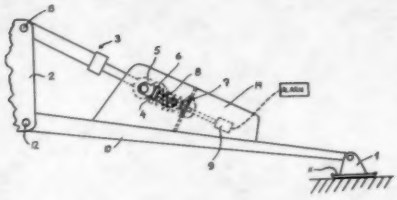
most of the load, the percentage split of load between the two springs remaining constant.

4,397,479

SUPPORTING LEG FOR MOBILE CONSTRUCTIONS

Mogens F. Schmidt, Vissenbjerg, Denmark, assignor to Falck Schmidt Shipping ApS, Odense, Denmark

Filed Jan. 19, 1981, Ser. No. 226,541
Claims priority, application Denmark, Jan. 29, 1980, 363/80
Int. Cl.³ B60S 9/10; B60P 3/28
U.S. Cl. 280—764.1 2 Claims



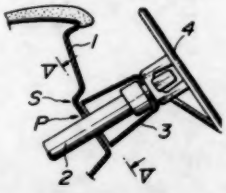
1. A stabilizing device for mobile construction equipment having a main body comprising at least one elongated leg pivotally attached at one end to the body of the equipment, a foot pivotally attached to the other end of said leg adapted to engage the foundation on which the equipment is setting, a planar bracket projecting from said leg, an elongated slot in said bracket, a piston and cylinder power unit pivotally connected at one end to the body and slidably connected at the other end in said slot, a stopper member mounted on said bracket between said slot and said foot, a contact arm mounted on said bracket between the end of said piston-cylinder connected in said slot and said foot, spring means operably mounted between said stopper and said contact arm to resiliently urge said contact arm into engagement with the end of said piston-cylinder connected in said slot, and alarm switch means operably mounted on said bracket between said contact arm and said foot so that said contact arm engages said switch when a predetermined force is exerted by said foot on said foundation to maintain a stable operating condition for the equipment and said contact arm disengages said switch when said force is reduced a predetermined amount to create an unstable operating condition, said disengagement activating an alarm.

4,397,480

INSTRUMENT PANEL CONCEALING PLATE STRUCTURE

Toshiki Ouchi, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 13, 1981, Ser. No. 282,682
Claims priority, application Japan, Jul. 25, 1980, 55/101315
Int. Cl.³ B60R 21/02
U.S. Cl. 280—777 3 Claims



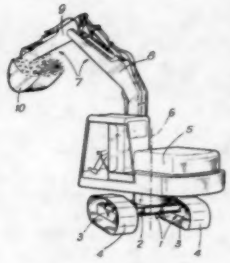
1. An instrument panel concealing plate integrally formed with an instrument panel about a steering column for concealing an inside of said instrument panel, which would otherwise be visible through the instrument panel and a steering column cover, said concealing plate being formed with a breakaway portion located outwardly of a bottom circumference of said steering column cover, such that said concealing plate is easily broken off along said breakaway portion when the steering column is forced forward to cause the steering column cover to collide with said concealing plate.

4,397,481

SUPPORTING CHASSIS FOR WORKING MACHINE, WITH CENTRAL FRAME AND SIDE-MEMBERS

Daniel J. Dion, Saint Pathus, and Daniel G. Ranini, Varreddes, both of France, assignors to Poclain, France

Filed Jul. 16, 1981, Ser. No. 283,926
Claims priority, application France, Aug. 7, 1980, 80 17453
Int. Cl.³ B62D 21/00
U.S. Cl. 280—781 12 Claims



1. Supporting chassis for a working machine, comprising:

a transversely extending central frame including indentations positioned on opposite sides of a longitudinal middle plane thereof, said indentations having a general concavity extending in a transverse direction away from said middle plane, and two transverse arms which border each said indentation; each arm being formed at least partially by a first plate which defines one said indentation and a cross-plate having opposite ends and positioned in a substantially vertical plane, each cross-plate being formed by a central plate assembled with said first plate and at least one end plate, each end plate being welded at an inner edge thereof to said respective central plate, and each arm having a prism-like configuration substantially dihedron in shape; and

two longitudinal side-members placed on opposite sides of and substantially parallel to said middle plane, and the ends of each cross-plate defining indentations which form welding areas where the central frame is secured by welding to the side-members such that said arms are secured to the side members by welding an outermost edge of each end plate to a respective side-member, and said prism-like configuration having an arris which is situated close to said welding areas.

4,397,482

CONSTRUCTION OF SASH ANCHOR

Hisashi Ogawa, Okazaki, and Yoshikazu Imai, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 29, 1981, Ser. No. 258,803
Claims priority, application Japan, May 15, 1980, 55-66853[U]
Int. Cl.³ B60R 21/10
U.S. Cl. 280—802 6 Claims

6. In combination with a vehicle passenger compartment a door sash anchor for use in a seatbelt system for automatically

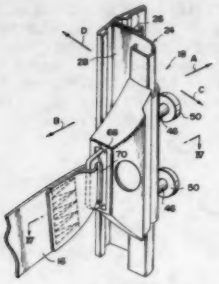
placing a webbing over an occupant in the vehicle passenger compartment, comprising:

(a) a retractor provided at the substantially central portion of the vehicle passenger compartment;

(b) an occupant restraining webbing, one end of which is wound into said retractor;

(c) an anchor plate provided at the other end of said webbing;

(d) a support base portion for mounting said anchor plate, said support base portion being a shaved-up portion defined by a pair of shorn portions in a U-shaped portion of the door sash, said shorn portions extending rectilinearly into the vehicle passenger compartment;



(e) an anchor pin with an enlarged head, for securing said anchor plate to said shorn portion;

(f) a bracket secured to a center pillar of the vehicle, being open to the outward direction of the vehicle, receiving an intermediate portion of said anchor pin when the door is closed, and being engaged with said enlarged head to prevent said anchor plate from moving forwardly in the vehicle in an emergency in the vehicle.

4,397,483

PRESSURE SENSITIVE RECORDING PAPER

Shigetoshi Hiraishi, Tokyo; Sadao Morishita, Ibaraki, and Toshihiko Matsushita, Funabashi, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 312,170

Claims priority, application Japan, Oct. 17, 1980, 55-145505; Nov. 12, 1980, 55-158187; Dec. 11, 1980, 55-174978

Int. Cl.³ B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **7 Claims**

1. A pressure sensitive recording paper which either (a) consists of a transfer sheet and an accepting sheet, wherein said transfer sheet has on its back surface a transfer layer consisting mainly of microcapsule containing an organic liquid which is a solvent capable of dissolving a colored oil-soluble dye, said accepting sheet has on its front surface a white-colored accepting layer consisting mainly of a mixture of colored oil-soluble dye and whitening agent, and a dark-colored record image can be obtained by using said transfer sheet and said accepting sheet so that their coated layers confront each other, or (b) consists of a transfer sheet and an accepting sheet, wherein said transfer sheet has on its back surface a white-colored transfer layer consisting mainly of a mixture of colored oil-soluble dye and whitening agent, said accepting sheet has on its front surface an accepting layer consisting mainly of microcapsule containing an organic liquid which is a solvent capable of dissolving a colored oil-soluble dye, and a dark-colored record image can be obtained by using said transfer sheet and said accepting sheet so that their coated layers confront each other or (c) is a pressure sensitive recording paper, wherein its transfer sheet has on its back surface a white-colored transfer layer consisting mainly of a mixture of (1) microcapsule containing an organic liquid which is a solvent capable of dissolving a colored oil-soluble dye, (2) colored oil-soluble dye and (3) whitening agent, and a dark-colored record image can be obtained on a plain paper by using said transfer sheet so that its transfer layer confronts the plain paper.

4,397,484

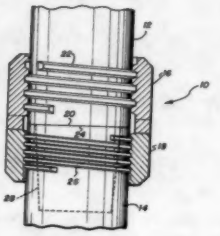
LOCKING COUPLING SYSTEM

Henry W. Miller, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1982, Ser. No. 369,329

Int. Cl.³ F16L *15/00*

U.S. Cl. 285—81 **5 Claims**



1. A system for joining two pipe ends comprising:

a first pipe having an internally and externally threaded end, said external threads having a predetermined pitch;

a second pipe having an externally threaded end with two sets of external threads, one set of said external threads for matching said internal threads of said first pipe and an other set of external threads spaced behind one set of threads having a different pitch from said predetermined pitch of said external threads of said first pipe and threaded in a direction opposite from said one set of external threads; and

coupling means having two sections, one section having threads matching said external threads on said first pipe and an other section having threads matching said other set of threads on said second pipe for locking said first and said second pipe together.

4,397,485

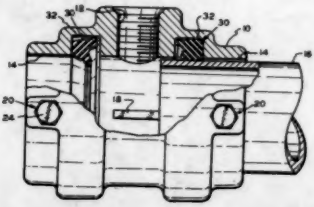
THREADLESS PIPE FITTING

Sherman L. Wood, Horton, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Continuation-in-part of Ser. No. 64,554, Aug. 8, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,376

Int. Cl.³ F16L *17/02*

U.S. Cl. 285—111 **6 Claims**



1. A threadless pipe fitting comprising, in combination, a fitting body having a cylindrical bore having an axis adapted to receive a cylindrical conduit, an annular sealing surface defined on said body concentric to said axis communicating with said bore, an annular elastomeric combination compression and

lip seal having an axis and engaging said sealing surface and adapted to be compressed between said sealing surface and the conduit inserted into said bore, said seal comprising an elastomeric body having axially spaced inner and outer faces, a base face concentric to and facing away from said seal axis and a conduit engaging face concentric to and disposed toward said seal axis, a first annular lip portion defined in said seal body having a relatively sharp annular apex located adjacent said seal inner face and extending toward said seal axis radially inwardly of said conduit engaging face in the normal noncompressed seal state, the radial thickness of said seal body at said seal apex being uninterrupted to support said apex under radial compression forces and the radial thickness of said seal body increasing in the axial direction from said seal outer face toward said apex whereby the normal seal radial thickness at said outer face is less than the radial distance from said body sealing surface to a conduit within said bore at said seal outer face and the radial thickness at the intersection of said conduit engaging face and lip portion is greater than the distance from said body sealing surface to a conduit within said bore at said intersection whereby insertion of a conduit within said bore radially compresses said seal compression sealing said seal base face against said body sealing surface and said seal conduit engaging face against the conduit and said lip portion apex firmly engages the conduit.

4,397,486

JOINT CONSTRUCTION OF PIPELINE

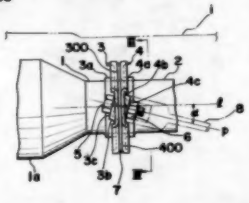
Eizaburo Ohya, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 3, 1981, Ser. No. 240,062

Claims priority, application Japan, Mar. 13, 1980, 55-33253[U]

Int. Cl.³ F16L *19/02, 23/00*

U.S. Cl. 285—368 **8 Claims**



1. A pipeline joint construction for an exhaust pipeline having a first longitudinal axis, disposed beneath the floor of an automobile body structure, said construction comprising:

two pipes;

two flange members having respective openings therein, said flange members being secured to respective one of said pipes with confronting ends of said pipes received in said openings;

a gasket sandwiched between said flange members; and

at least two fastening members, each including a headed bolt and a nut, for fastening said flange members together with said gasket clamped therebetween to connect said pipes together, each of said flange members having

a flat portion located circumferentially of and extending perpendicularly to the longitudinal axis of the opening thereof and extending perpendicularly to the longitudinal axis of the corresponding pipe received thereby, said flat portion defining a gas seal face held in contact with said gasket;

holes equal in number to the number of said fastening members for insertion therethrough of said headed bolts of said fastening members, said holes being defined in said flange members at respective positions laterally outwardly of said openings in a plane generally parallel to the floor of the automobile body structure; and

bearing portions located circumferentially of and adjacent to the respective holes, said bearing portions having flat bearing faces each defined on the side of said each of said flange members opposite to the gas seal face thereof;

the heads of said bolts and said nuts abutting said flat bearing faces of said fastening members when said flange members are fastened together by said fastening members with said bolts passed through the respective holes and then threaded with the respective nuts; said flat bearing faces of the respective bearing portions of each of said flange members extending at respective angles of inclination to the longitudinal axis of the respective one of said pipes to which said each of said flange members is secured, such that when said flange members are fastened together, said bearing faces of the respective bearing portions of one of said flange members face slantingly upward in a first direction toward the floor of the automobile structure and the bearing faces of the respective bearing portions of the other of said flange members face slantingly downward in a direction away from said floor of said automobile;

said bolts, when passed through the respective holes in said flange members, having their longitudinal axes extending at right angles to the corresponding flat bearing faces which the heads of said bolts and their respective nuts abut when said flange members are fastened together therewith, and being inclined relative to said first longitudinal axis of said pipeline and said plane, whereby the fastening of said fastening members to clamp said flange members together can be carried out from below the automobile body structure.

4,397,487

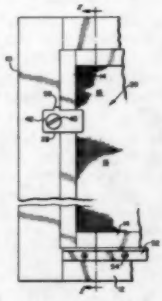
FREE-WHEELING LATCHING SYSTEM

Milton Guttman, 1719 NE. Miami Gardens Dr., Apt. 230, North Miami Beach, Fla. 33179

Filed Aug. 28, 1980, Ser. No. 182,100

Int. Cl.³ E05C *3/04*

U.S. Cl. 292—202 **7 Claims**



1. Apparatus for securing a removable, first closure frame in a second closure frame, wherein the edge of the first frame extends perpendicularly an overhang distance beyond the edge of the second frame, the apparatus comprising:

(a) a shaft non-rotatably attached to said second frame and extending perpendicular to the edge of said second frame; said second frame being vertically disposed;

(b) an elongated latching plate having an eccentrically positioned aperture sized for free-wheeling rotation of said plate on said shaft;

(c) means for spacing said latching plate from said first frame to allow rotation of said latching plate from said first frame to allow rotation of said latching plate past the edge of the first frame to a position wherein the first frame is captured between said plate and the second frame;

(d) means for retaining said latching plate on said shaft during said free-wheeling rotation of said plate; and

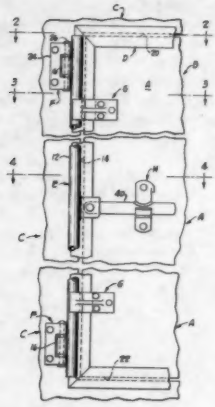
(e) means for aligning and supporting the first frame during rotation of said latching plate to said capture position.

4,397,488

CLOSURE CONTROL MECHANISM

John V. Pastva, Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Sep. 5, 1980, Ser. No. 184,310
Int. Cl.³ E05C 9/08
U.S. Cl. 292—210 2 Claims



1. A closure control mechanism for securing a pivoted first member to a second member, said mechanism comprising an elongated bolt member connected to the second member for rotation about an axis spaced from and parallel with the edge of the first member opposite to the pivotal axis of the first member, means for oscillating said bolt member about its axis, and a keeper member attached to the first member adjacent to the edge of the first member opposite to the pivotal axis of the first member, said keeper member having a base part and a part spaced from said base part providing a surface facing in the direction of said base part for engagement of said bolt member therewith when said bolt member is pivoted in one direction about its pivotal connection with said second member.

4,397,489

LEVER ADAPTER FOR DOOR KNOB

Willard H. Lind, 24 Shady Hill Rd., Weston, Mass. 02193

Filed Dec. 22, 1980, Ser. No. 219,816
Int. Cl.³ E05C 19/18
U.S. Cl. 292—347 18 Claims

1. An adapter for providing a handle to a round door knob having a supporting shaft comprising,

an internally threaded cylinder,

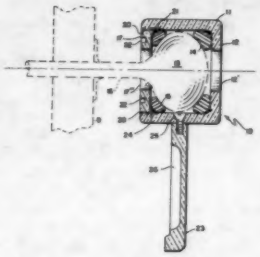
a collar on one end said cylinder,

said cylinder adapted to pass over said knob until stopped by said collar,

said cylinder having a handle extending transversely to the cylinder axis,

an externally threaded pressure ring adapted to be screwed into said internally threaded cylinder,

said ring also being adapted to be rotated about said supporting shaft and screwed into said internally threaded cylinder after said knob is within said cylinder to cause said cylinder to be frictionally attached to said knob and to have a fixed positive relation to said knob and to allow



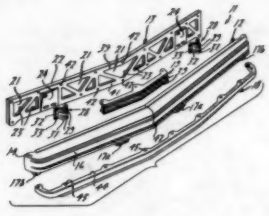
said knob to be turned by said handle attached to said cylinder.

4,397,490

LOW PROFILE BUMPER

William J. Evans, Redford Township, Wayne County, and Charles Haddad, West Bloomfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1981, Ser. No. 260,524
Int. Cl.³ B60R 19/08
U.S. Cl. 293—120 9 Claims



1. A vehicle bumper having a "C" section face bar attached to a truss-formed backplate;

the face bar having substantially horizontal upper and lower shelves of a width slightly in excess of the frontal face height of the face bar and of the backplate to form a substantially square box beam;

wherein the improvement comprises:

a plurality of underride stops drawn from the lower shelf and extending substantially along the entire width thereof to vertically extend the impact functional height of the box beam;

the stops providing low pendulum impact performance at minimal weight addition to the bumper.

4,397,491

PORTABLE VACUUM OBJECT HANDLING DEVICE

Gordon H. Anderson, Los Alamos, N. Mex. (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

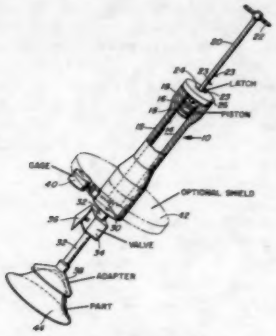
Filed Jul. 30, 1981, Ser. No. 288,561
Int. Cl.³ B66C 1/02
U.S. Cl. 294—64 R 3 Claims

1. A hand held vacuum holding apparatus comprising:

an elongated housing fittable in a user's hand comprising a generally cylindrical bore wall longitudinally disposed therein;

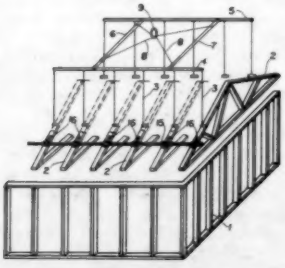
a piston sealably and slidably engagable with said bore wall disposed therein;

means for moving said piston reciprocally within said bore wall;
means for locking said piston in at least one position;
a piece engaging member communicating with said bore wall, said member comprising a conduit relatively small compared to said bore wall;
valve means operably connected to said member for opening and sealing said conduit therein;



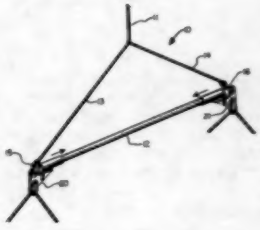
a removable adapter sealably fittable with an object to be held communicating with said piece engaging member;
a vacuum gauge communicating with said member for providing a reading of the vacuum present within said apparatus; and
a radiation shield disposed about the housing for protecting a user's hand from radiation from an object being held.

4,397,492
ROOF TRUSS SUSPENSION
William R. Craig, Rte. 286, Monroeville, Pa. 15146
Filed Aug. 27, 1981, Ser. No. 296,641
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ B66C *1/14*
U.S. Cl. 294—81 R **2 Claims**



1. A rig for simultaneously setting a plurality of roof trusses on a building framing, comprising a pair of horizontally extending, spaced parallel beams adapted to extend over the respective central portions of the sloping sides of said trusses, a pair of cross beams at right angles to said beams and having ends connected to intermediate portions of said beams so as to provide overhanging extensions of said first mentioned pair of beams, a plurality of spaced vertical flexible linkage means suspended from each of the four overhanging extensions, and a plurality of spaced vertical flexible linkage means suspended from the intermediate remaining portions of said first mentioned pair of beams, and suspending means for support by the hook of a crane, said suspending means comprising four flexible linkage means extending from said hook and connected to end portions of each of said cross beams, a substantially U-shaped rod with parallel sides and an integral tooth projecting from the center of the U-shape parallel to the legs thereof, which rod is attached to the lower extremity of each of said vertical flexible linkage means to enable the lower end portions of the vertical flexible linkage means to wrap around the central portion of the sloping side of the respective truss and to be secured by inverting said U-shaped rod and snugly encircling it over the top of the central sloping side of the respective truss and piercing the top center with said tooth with said parallel sides closely fitting the sides of said truss, whereby the entire plurality of roof trusses may be easily and quickly lifted, lowered and moved horizontally to adjustably set them in place simultaneously on said building framing.

4,397,493
SPREADER BAR ASSEMBLY
Jon E. Khachaturian, and Joseph P. Charles, both of Harvey, La., assignors to Versabar, Inc., Harvey, La.
Filed Sep. 8, 1981, Ser. No. 300,059
Int. Cl.³ B66C *1/10*
U.S. Cl. 294—81 R **18 Claims**

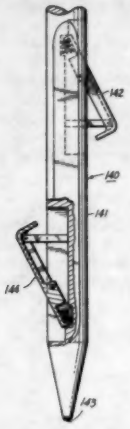


1. A spreader bar assembly comprising:
a. A rigid elongated support bar;
b. A pair of lifting eye means removably connected during a lifting operation at each respective end portion of said bar for forming a connection with an above supporting bridle line and at least one depending lift line, each of said lifting eye means including an integral female socket for receiving one end of said bar thereinto and having a corresponding internal cross-section equal to or slightly larger than the external cross-section of said support bar; and
c. transverse stop means within each of the sockets for abutting the end portion of the elongated support bar thereby limiting the penetration of the bar into the socket, the pair of lifting eye means being freely separable from the bar and held thereto during a lifting operation by forces applied to each of the lifting eye means by load lines attached thereto.

4,397,494
FISHING TOOL TO RETRIEVE CABLES FROM WELLS
Herman C. Carver, Bakersfield, Calif., assignor to Petroworld, Ltd., Spokane, Wash.
Continuation-in-part of Ser. No. 193,304, Oct. 2, 1980, Pat. No. 4,353,585. This application Jul. 30, 1981, Ser. No. 288,356
Int. Cl.³ E21B *31/12*
U.S. Cl. 294—86.1 **13 Claims**

1. A fishing tool to snag and retrieve cables from wells, comprising: an elongated body having a first and a second end, a substantial length, and a peripheral boundary of lesser lateral dimensions than a well down which the tool is to be sent with said first end pointed down; a snag member comprising a shank and a free end on said shank, said shank being mounted to said body so that said free end faces toward one of said body ends

and so that said free end is movable toward and away from said peripheral boundary; a snag recess in said body axially aligned with at least part of said shank, said recess being in part defined by a surface facing toward said second end and inclined away from said second end to receive and hold a cable faced into said recess by said snag member while said body is moved toward its second end, bias means biasing said shank to move said free



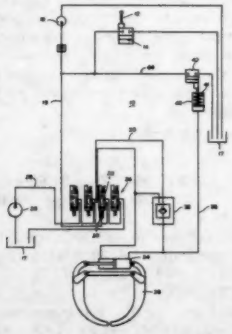
end toward said peripheral boundary; and detent means interposed between said snag member and said body adapted releasably to hold said snag member with its free end outside of said boundary in opposition to the bias force exerted by said bias means, and upon release as the consequence of an object striking said detent means to permit said bias means to move said snag member to cause said free end to move toward said boundary in the absence of some other impediment thereto.

4,397,495

AUTOMATIC GRIP CONTROL CIRCUIT FOR A GRAPPLE MECHANISM

Stephen A. M. Lewis, London, Canada, assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jun. 29, 1981, Ser. No. 278,269
Int. Cl.³ B66C *3/16*; F15B *13/042*
U.S. Cl. 294—88 **12 Claims**



1. An automatic grip control circuit for a grapple mechanism comprising grapple tongs operable by a hydraulic grapple cylinder to reciprocally open and close about a load of logs and the grip control circuit being operatively connected to the hydraulic grapple cylinder, said circuit comprising:

a main hydraulic pump connected to a main fluid supply tank for supplying hydraulic fluid to the grapple cylinder,

a first on-off valve operative to provide pilot pressure to a main hydraulic actuating valve for the circuit,

a first pilot line provided between the first on-off valve and the main hydraulic actuating valve to provide fluid to actuate a spool valve of the main hydraulic actuating valve for the grapple cylinder,

a main hydraulic line provided from the main pump through the spool valve to the grapple cylinder to actuate said cylinder,

a second pilot line provided in the main hydraulic line between the grapple cylinder and an automatic grip control valve, and

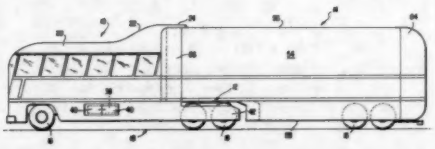
a second on-off valve actuatable from a first or closed position to a second or open position by the automatic grip control valve to direct excess fluid to the main fluid supply tank and actuatable from the second or open position to the first or closed position by the automatic grip control valve to direct hydraulic fluid to the main hydraulic actuating valve to increase pressure in the grapple cylinder.

4,397,496

VEHICULAR AND PASSENGER TRANSPORTATION SYSTEM

Thomas C. J. Drygas, III, 3928 Tara Hall Dr., Jacksonville, Fla. 32211

Filed Nov. 3, 1980, Ser. No. 203,419
Int. Cl.³ B62D *27/00*; B65G *67/02*
U.S. Cl. 296—1 S **2 Claims**



1. A system for transporting passengers and their accompanying vehicles over roadways comprising:

a. a bus section having at least a power means, a steering means, and a braking means, said bus section being supported on wheels and being capable of self-propelled movement, under the control of an operator in an operations area, over the roadways, said operations area being located at the front of said bus section and providing the accommodations area for the operator, said operations area having a seat supporting the operator in close proximity to said steering and braking means, said bus section also having a passenger accommodation area with a plurality of seating areas for passengers, said seating areas being sequentially arranged in rows extending rearwardly from said operations area;

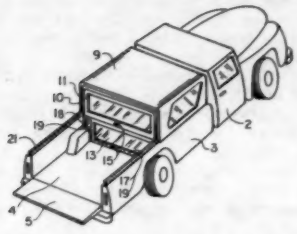
b. a trailer including a body structure supported on wheels for movement over roadways and having means receiving a plurality of vehicles and retaining such vehicles within said body structure during movement of said trailer;

c. coupling means removably coupling said bus section to said trailer including a first portion fixed to and rearwardly directed from said bus section and a second portion fixed to and forwardly directed from said trailer, whereby said trailer is attachable to said bus section in towable relationship thereto and whereby, when said bus section and said trailer are in attached relationship the passengers can occupy the accommodation area and their vehicles are loadable on said trailer for simultaneous movement of the passengers and vehicles.

4,397,497
EXPANDABLE CAMPER BODY

George J. Alonzo, Jr., and George J. Alonzo, Sr., both of 304 Athania Pkwy., Metairie, La. 70001

Filed Oct. 2, 1980, Ser. No. 193,034
Int. Cl.³ B62D 33/08
U.S. Cl. 296—26 9 Claims

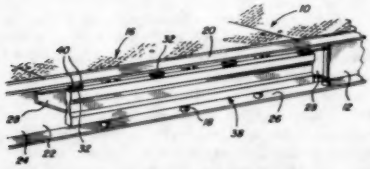


1. In a vehicle having a cab and a flat bed truck body a unitary expandable camper body structure for use as a camper and comprising a front unit and a back unit, the front unit being permanently secured to the flat bed of the truck and the back unit being adapted for telescoping into and out of the front unit so as to provide for use both as a pick-up truck and as a camper either simultaneously or alternatively, the front end being completely enclosed when in unexpanded condition and the back unit being fully enclosed in the expanded condition, furthermore the back unit has an upper half tailgate and a lower half tailgate so as to provide a completely sealed compartment in either expanded or collapsed position.

4,397,498
COLLAPSIBLE OUTRIGGER SIDE EXTENSION FOR LOAD BED

Gerald E. Joynt, and Michael L. Chan, both of Sioux City, Iowa, assignors to Wilson Trailer Company, Sioux City, Iowa

Filed Jul. 22, 1981, Ser. No. 285,972
Int. Cl.³ B62D 33/02
U.S. Cl. 296—182 8 Claims

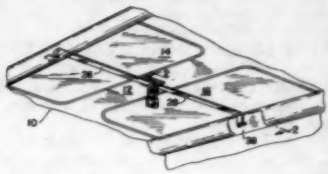


1. In combination with a generally horizontal load bed including a marginal edge, a plurality of parallel cantilever support arms spaced along said marginal edge and pivotally supported at one set of corresponding ends thereof from said marginal edge for angular displacement relative thereto about upstanding axes between extended positions with the other set of corresponding ends of said arms projecting outwardly from said marginal edge and folded positions with said arms generally paralleling said marginal edge, an elongated extension panel paralleling said marginal edge and overlying and supported from the other set of corresponding ends of said arms, and pivot means pivotally supporting one longitudinal side edge of said panel from said arms for swinging between an operative horizontal position overlying said arms when the latter are in said extended positions and an inoperative vertical position disposed immediately outwardly of and paralleling said arms when the latter are in said folded positions.

4,397,499
VEHICULAR T-ROOF LOCKING DEVICE

Beverly M. Work; Frederick T. Work, Jr., both of 1431 W. 6th Ave., Gary, Ind. 46402, and Charles O. Scull, 601 Taft Pl., Gary, Ind. 46404

Continuation of Ser. No. 75,132, Sep. 12, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,579
Int. Cl.³ B60J 7/10
U.S. Cl. 296—218 6 Claims

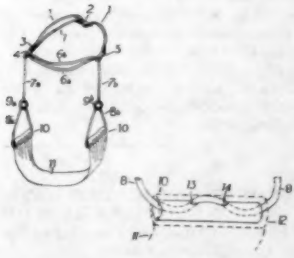


1. An apparatus capable of locking a plurality of roof panels, associated with a transportation vehicle in place in the roof of said vehicle, each of said panels being removably fitted in said roof and latched to said roof by a latch assembly including a peg which is capable of being turned to deactivate said latch assembly, thereby releasing said panel from said roof, said roof including at least one fixed roof portion, which apparatus comprises a plurality of bar means each having a first and second end, said first end having connected thereto a sleeve means capable of receiving at least a portion of said peg, thereby preventing said peg from being turned and said latch means from being deactivated, and said second end capable of being temporarily secured to said fixed roof portion; and, single lock means capable of associating with said second end of each of said bar means and said fixed roof portion to temporarily secure each said second end to said fixed roof portion thereby locking said roof panels in place in said roof of said vehicle.

4,397,500
PORTABLE OUTDOORSMAN'S SEAT

Richard D. Moffitt, 711 Lime Hollow Rd., Cortland, N.Y. 13045

Filed Feb. 9, 1981, Ser. No. 232,909
Int. Cl.³ A47C 13/00
U.S. Cl. 297—118 3 Claims



1. A portable seat intended to be hung from the trunk of a tree, comprising:

a. sling seat means for supporting an occupant having at each of its ends a portion folded back upon itself defining a pocket;

b. two rigid sleeves, one for fitting within each pocket;

c. each of said sleeves having two holes perpendicular to the long axis thereof, and spaced along the length thereof, dividing the sleeve into three segments;

d. rope means passing through each of the sleeves, for hanging the seat from a support located above;

e. the rope of each of said rope means passing into each of said sleeves, out of the interior of said sleeve throiugh one of the holes, back into the interior of the sleeve through the other hole, and exiting through the opposite end of the sleeve from which it entered;

f. said arrangement of the rope means and the sleeves being usable to adjust the tilt of the seat relative to the support.

4,397,501

VEHICLE SEAT, MORE SPECIALLY FOR COMMERCIAL VEHICLES

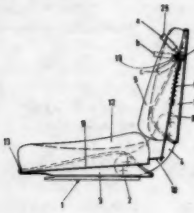
Hermann Meiller, and Otto Kunst, both of Amberg, Fed. Rep. of Germany, assignors to Messrs. Willibald Grammer, Amberg, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,839

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1980, 3000433

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—301 **13 Claims**



1. An adjustable motor vehicle seat having a seat portion and a backrest portion and being adjustable to compensate for differing weights of users, comprising: (a) a backrest support; (b) a backrest support plate connected in sliding relation to said backrest support and being capable of generally upright motion when acted upon by the user's weight, (c) a seat support plate connected substantially perpendicularly to the backrest support plate; (d) spring means for biasly supporting the seat support plate, said spring means being operatively connected between said backrest support and said backrest support plate; and (e) an adjustment means for operatively connecting said backrest support and said backrest support plate and for changing said support position of said spring means in relation to said backrest support and thus for adjustment of the springing properties of such seat portion connected to the backrest support plate, wherein said adjustment means has a support lever rotatably fixed to the seat capable of rotatably turning about a generally horizontal axis, and an adjustment lever designed to be spring-locked in at least two positions in which it keeps said support lever at different angles in relation to the seat to which it is rotatably fixed.

4,397,502

TWO-PASS METHOD FOR DEVELOPING A SYSTEM OF IN SITU OIL SHALE RETORTS

Alex E. Hines, Clifton, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Feb. 9, 1981, Ser. No. 233,004

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—2 **35 Claims**

1. A two-pass method for recovering liquid and gaseous products from a system of in situ oil shale retorts formed in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:

forming a first set of in situ oil shale retorts in the subterranean formation containing oil shale, such a first set of in situ retorts including separate groups of in situ oil shale retorts formed in different horizontally spaced apart regions of the subterranean formation containing oil shale, leaving an intervening zone of unfragmented formation between adjacent groups of in situ retorts;

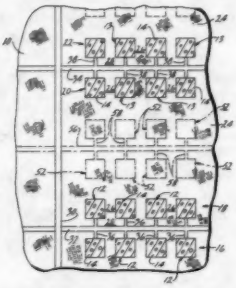
forming a first gas level drift system that communicates with fragmented masses of the separate groups of in situ retorts within the first set;

conducting retorting operations in at least one of the fragmented masses of the groups of in situ retorts within the first set for producing liquid and gaseous products of retorting;

withdrawing liquid products from the fragmented masses of the first set of in situ retorts that are being retorted;

withdrawing gaseous products from such fragmented masses of the first set of in situ retorts through the first gas level drift system;

forming a second set of in situ oil shale retorts in such intervening zones of unfragmented formation between adjacent groups of in situ retorts within the first set, leaving



barriers of unfragmented formation between the second set of in situ retorts and such adjacent groups of in situ retorts within the first set for isolating retorting operations in the second set of in situ retorts from retorting operations in such adjacent groups of in situ retorts within the first set;

forming a second gas level drift system that communicates with the fragmented masses of the second set of in situ retorts, leaving sufficient unfragmented formation between the second gas level drift system and the first gas level drift system for preventing gas flow between the two gas level drift systems;

conducting retorting operations in at least one of the fragmented masses within the second set of in situ retorts for producing liquid and gaseous products of retorting;

withdrawing liquid products from the such fragmented masses of the second set of retorts which are being retorted; and

withdrawing gaseous products from such fragmented masses of the second set of retorts through the second gas level drift system.

4,397,503

AURIFEROUS GRAVEL INTERCEPTOR

Harry K. Williams, 1204 Roxboro House, 330-26th Ave. S.W., Calgary, Alberta T2S 2T3, Canada

Filed Jun. 10, 1981, Ser. No. 272,087

Claims priority, application Canada, Jun. 17, 1980, 354147

Int. Cl.³ E21C *45/00*

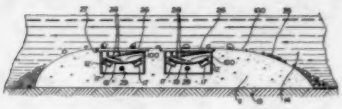
U.S. Cl. 299—8 **6 Claims**

5. A method of collecting precious metal and gemstones from a river, comprising the steps of:

(a) screening from said river, material moving along the bed of said river and containing said precious metal and gem-

stones, by positioning a channel member having a screened upper surface laterally across the bed of said river;

(b) collecting said screened material on a belt means moving longitudinally through said channel member, the belt means transporting the screened material to at least one bank of the river;



(c) removing said screened material from said belt means on said at least one bank of the river; and

(d) separating said precious metal and gemstones from said screened material after removal of said screened material from said belt.

4,397,504

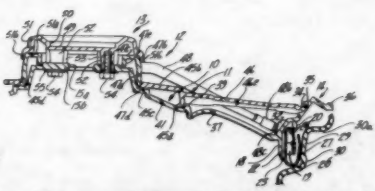
WHEEL COVER SIMULATING A WIRE SPOKE WHEEL

James Connell, 5017 Dianna Dr., Bloomfield Hills, Mich. 48013

Filed Apr. 14, 1980, Ser. No. 140,035

Int. Cl.³ B60B *7/04*

U.S. Cl. 301—37 P **18 Claims**



1. A multiple part wheel cover adapted to be detachably secured to an annular rim flange of a vehicle wheel for simulating a wire spoke wheel comprising a retainer having a peripheral rim, a spoke assembly comprising an annular member of smaller diameter than said rim and coaxial therewith and also comprising a plurality of spokes having radially inner ends secured to said annular member at circumferentially spaced locations, said spokes extending from their radially inner ends to said rim, means for securing the radially outer ends of said spokes to said rim at circumferentially spaced locations, and means for clamping said annular member coaxially to said retainer including conical means coaxial with said annular member for applying radially outwardly directed force to said annular member at locations around its axis and also for urging said member axially toward said retainer when said member and retainer are clamped together.

4,397,505

CONTROL VALVE

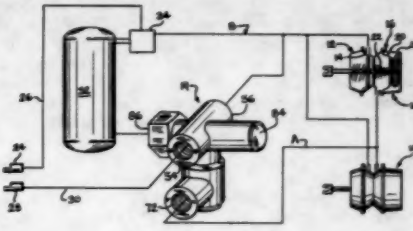
Herbert L. Linkner, Jr., Dexter, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Mar. 16, 1981, Ser. No. 244,517

Int. Cl.³ B60T *13/38*

U.S. Cl. 303—9 **11 Claims**

1. A backpressure valve for maintaining a pressure on an outlet port equal to or greater than that at an inlet port comprising: a valve body having an axially extending cylindrical chamber therein, an axially extending exhaust tube projecting into one end of said cylindrical chamber and providing an annular outlet pressure chamber surrounding said exhaust tube, an annular exhaust valve seat on the end of said exhaust tube, a valve piston in said cylindrical chamber having a valve closure surface adapted to abut said annular valve seat, said valve piston having an annular clearance with respect to the sidewalls of said cylindrical chamber permitting fluid flow therethrough in a forward direction, and a one way seal projecting



out of the side of said valve piston into engagement with said cylindrical sidewalls, said one way seal permitting said forward flow from said cylindrical chamber to said annular outlet pressure chamber but preventing reverse flow.

4,397,506

DECELERATION SENSING VALVE ASSEMBLY FOR VEHICLE BRAKE

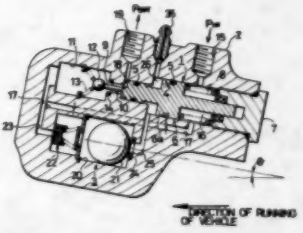
Hidefumi Inoue, Omiya, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,122

Claims priority, application Japan, Feb. 13, 1980, 55-16210

Int. Cl.³ B60T *8/14*

U.S. Cl. 303—24 C **11 Claims**



1. A deceleration-sensing valve assembly for regulating brake fluid pressure in a vehicle movable in a forward direction, comprising:

housing means defining therein a chamber;

an inlet passage opening into said chamber for permitting fluid to be supplied thereto;

an outlet passage which opens into a rear portion of the chamber for permitting the fluid to flow from the chamber into the outlet passage;

a first normally-closed, inertia-actuated valve mechanism for controlling the flow of fluid from the chamber to the outlet passage, said valve mechanism including a valve body movably disposed within said chamber and engageable with a valve seat positioned rearwardly of the valve body relative to the forward direction of the vehicle, said valve seat being disposed in surrounding relationship to the opening of the outlet passage, said valve body tending to move under its own inertia forwardly away from the valve seat in response to vehicle deceleration of a given value as caused by (1) a first predetermined brake fluid pressure when decelerating an empty vehicle and (2) a second predetermined brake fluid pressure when decelerating a loaded vehicle, said second predetermined pressure being greater than said first predetermined pressure; and

a second normally-closed valve mechanism associated with said inlet passage for controlling flow of fluid through said inlet passage into said chamber, said second valve mechanism having means associated therewith for permitting opening of said second valve mechanism and flow of fluid through said inlet passage into said chamber only when the fluid in said inlet passage equals or exceeds a third predetermined fluid pressure which is greater than said first predetermined pressure but less than said second predetermined pressure;

whereby deceleration of an empty vehicle permits said valve body to move away from said valve seat and open said first valve mechanism prior to opening of said second valve mechanism so that the fluid when it exceeds said third predetermined pressure can then flow from the inlet passage through the opened second valve mechanism into the chamber and thence into the outlet passage, whereas when decelerating a loaded vehicle the valve body remains seated against the valve seat even after the second valve mechanism opens so that the fluid within the chamber then also acts against the valve body and assists in holding it against the valve seat even if the fluid exceeds said second predetermined pressure.

4,397,507

NOVEL PLASTIC CAGE FOR ROLLING BEARINGS

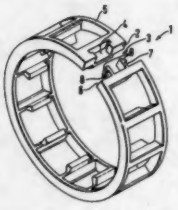
Gerhard Kraus, Herzogenaurach, and Günther Schwarz, Höchstadt, both of Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Sep. 18, 1981, Ser. No. 303,618

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041860

Int. Cl.³ F16C *33/46*

U.S. Cl. 308—217 **3 Claims**



1. A plastic cage for rolling bearings split at least one point of its circumference, the abutting faces of the split ends being provided with mutually corresponding projections and depressions to form-lock the ends relative to each other radially and axially and for tangential fixation of the abutting faces of the split ends, one abutting face having integrally formed therewith at least one resilient tongue with a hook projection as one of said projections and the other abutting face being provided with a cooperating recess as a said depression and a depression for the hook projection.

4,397,508

BUILT-IN BAKING AND ROASTING OVEN

Armin Bohnet, Goetheplatz 5, D7520, Ludwigsburg, and Horst Baschin, Merianstrasse 53, D7520, Bruchsal, both of Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,416

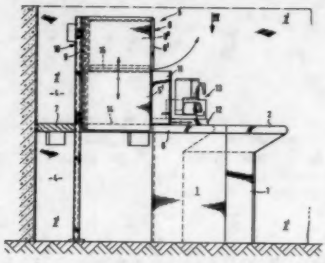
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004410; Feb. 7, 1980, 8003163[U]

Int. Cl.³ A47B *51/00*

U.S. Cl. 312—312 **4 Claims**

1. An installation for a baking and roasting oven in a built-in kitchen composed of cabinet-like modules immediately adjacent one another and covered with tops forming a work surface, said installation comprising:

a wall cabinet housing accomodating said baking and roasting oven and presenting an interior bottom surface, said baking and roasting oven being disposed in said housing at a location above said bottom surface to define, between the bottom of said oven and said bottom surface, a storage chamber for receiving a movable carrier plate for small



kitchen appliances, said cabinet being integrated into the built-in kitchen; and

displacement means supporting said wall cabinet housing and arranged to move said housing vertically between a lowered position and a raised position in which said bottom surface is disposed at the level of the portion of the work surface formed by the tops of the modules directly in front of said housing.

4,397,509

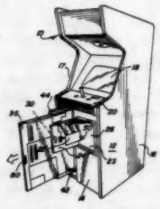
ARCADE GAME HOUSING

Anthony J. Miller, Skokie, and Brian L. Poklacki, Chicago, both of Ill., assignors to Universal Research Laboratories, Incorporated, Elk Grove Village, Ill.

Filed Mar. 26, 1981, Ser. No. 247,729

Int. Cl.³ A47B *63/00*; E05B *65/46*

U.S. Cl. 312—320 **13 Claims**



1. An arcade game having an upright housing carrying a control panel, the upright housing enclosing electronic circuitry for the game, the upright housing having a rear side that typically faces a wall when the game is installed and played, the improvement comprising:

the upright housing defining an opening on a portion thereof other than its rear side;

a sliding panel carrying said electronic circuitry;

means connecting the panel for sliding cooperation with the upright housing whereby the panel extends outside of the housing in an access position and the sliding panel is slid into the housing in a normal game-play position;

a door for covering said opening;

means connecting the door to the housing and permitting the door to be located in an open position when the panel is in the access position and permitting the door to be located in a closed position, covering said opening, when the

panel is in the normal game-play position; coin-receiving means carried by the housing, the housing defining an access opening for the coin-receiving means;

a closure for covering said access opening;

means for locking said closure closed to prevent access to the coin-receiving means; and

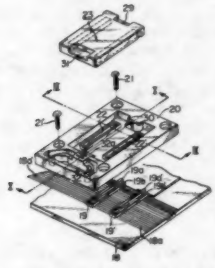
means for locking said door, said door locking means being inaccessible when said closure is locked closed, said door locking means comprising a linkage interconnecting the housing and the door; and means for operating said linkage to enable opening of the door only when the closure is unlocked.

4,397,510

CAPSULE CONNECTOR

Takafumi Asada, 22-6, Matsugaoka-cho, and Kazuyoshi Shinohara, 36-4, Yamadaike Higashi-cho, both of Hirakata-shi, Osaka, Japan (573)

Filed Jul. 9, 1981, Ser. No. 281,666
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—17 CF **1 Claim**



1. A capsule connector characterized in that multi-contact connectors for establishing electrical connections between contacts of a capsule on the one hand and contacts on a base member on the other hand are disposed at the bottom of a receptacle having a space for receiving said capsule therein so as to hold said capsule in a predetermined position, said receptacle being mounted on said base member;

a projection is extended from one side of said receptacle so as to engage with one side of said capsule;

a sliding pawl is disposed at the other side of said receptacle;

a spring means is so disposed that a resilient force acts between said capsule and said receptacle;

said sliding pawl is slidable into said space of said receptacle and has such a shape that it retains said capsule in position against said resilient force generated by said spring means;

each of said multi-contact connectors comprises a main body which is made of an electrically insulating and resilient material and is in an inverted T-shape in cross section and a plurality of electrically conductive and resilient members such as lead wires extended through said main body so that said multi-contact connectors serve as said spring means;

elongated slots are formed through the bottom of said space of said receptacle; and

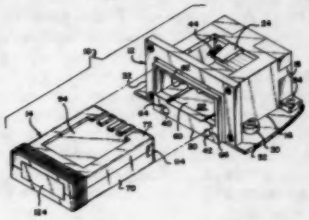
said receptacle is mounted on said base member in such a way that the ridge portions of said multi-contact connectors are extended through and beyond said elongated slots and the undersurface portions surrounding said elongated slots of said receptacle press the flange portions of said multi-contact connectors against said base member.

4,397,511

CARTRIDGE HOLDER AND CONNECTOR SYSTEM

Richard P. Clark, Hershey; Robert H. Frantz, Carlisle; Gary W. Hawk, Halifax, and John A. Root, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 252,511, Apr. 8, 1981, Pat. No. 4,379,606.
This application Nov. 10, 1982, Ser. No. 440,653
Int. Cl.³ H01R *23/70*
U.S. Cl. 339—17 CF **7 Claims**



1. An electronic component carrying cartridge for mounting in a housing of an electrical system to provide said system with additional components, memory storage and the like, said cartridge comprising:

mating first and second housing covers defining a cavity therebetween, one end of said cavity being open;

an electronic assembly received in said cavity, said assembly having a circuit board, electronic components mounted on said circuit board, an electrical connector mounted along one edge of said circuit board, and a plurality of terminals mounted in said connector with each terminal having a first end connected to said circuit board and a second end directed outwardly of said cavity; and

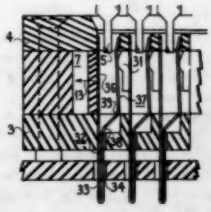
a cover plate closing said cavity, having a portion enclosing said connector and a plurality of apertures providing access to said terminals, said cover plate having an outwardly directed profile allowing insertion of said cartridge only into a like profiled cartridge receiving cavity of said electrical system.

4,397,512

ZERO INSERTION FORCE CONNECTOR, PARTICULARLY FOR AN INTEGRATED CIRCUIT

Michel Barraire; Marcel Roux, and Jean P. Turolla, all of Suresnes, France, assignors to SOCAPEX, Suresnes, France

Filed Feb. 18, 1981, Ser. No. 235,638
Claims priority, application France, Feb. 19, 1980, 80 03575
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—75 M **5 Claims**



1. A zero insertion force connector for a component having a plurality of connecting lugs, comprising:

an insulating block supporting a plurality of contact elements, each contact element being in the form of a resilient clip having a first and second leg and wherein said insulating block further comprises an upper, intermediate

and lower plate member having a plurality of openings formed therein for passage of said contact elements therethrough and wherein said plates further comprise an upper, intermediate and lower wafer member disposed so as to be superimposed in parallel, the intermediate wafer member being movable in translation with respect to the upper and lower wafer member between first and second positions, said first and second legs of said contact elements being spaced apart at said first position to such an extent that said connecting lugs of said component can be inserted into said connector without friction, and said first and second legs of said contact elements clamp said lugs of said component in said second position in order to hold said component in position, each said contact element symmetrically carrying solely on said first leg a pair of levers oriented parallel thereto, each lever being separated from said first leg by a slotted region, and wherein said intermediate movable wafer member further comprises, on each side of each opening thereof, a projecting pusher, each pusher cooperating respectively with said levers at the level of the slotted region of each lever so that displacement of the levers under the action of each of said pushers results in displacement of said first leg of each contact element such that said plurality of connecting lugs are resiliently clamped.

4,397,513

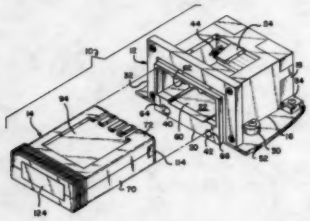
CARTRIDGE HOLDER AND CONNECTOR SYSTEM

Richard P. Clark, Hershey; Robert H. Frantz, Carlisle; Gary W. Hawk, Halifax, and John A. Root, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 252,511, Apr. 8, 1981, Pat. No. 4,379,606. This application Nov. 10, 1982, Ser. No. 440,652

Int. Cl.³ H01R *23/70*

U.S. Cl. 339—91 R **5 Claims**



1. A holder for mounting on a circuit board or the like and receiving a cartridge therein and making electrical interconnection therewith, said cartridge containing electronic components, said holder comprising:

a first housing member of rigid plastics material defining an elongated through cavity, and means for mounting said first housing member on said circuit board;

a connector housing receivable in and enclosing one end of said cavity of said first housing member;

a plurality of electrical terminals mounted in said connector housing, each terminal having a first end directed into said cavity and a second end electrically and mechanically attached to said circuit board; and

a profiled face plate mounted on said housing member at the opposite end from said connector housing and defining a profiled access to said cavity whereby only cartridges having a mating profile will be allowed entry.

4,397,514

SELF-CLAMPING ELECTRICAL CONNECTORS AND TERMINAL BLOCKS

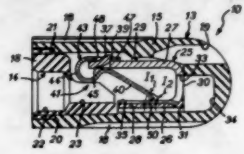
Guy Durand, Montville, and Daniel Paulin, Bosc le Hard, both of France, assignors to Legrand, Limoges, France

Filed Apr. 2, 1981, Ser. No. 250,158

Claims priority, application France, Apr. 4, 1980, 80 07675

Int. Cl.³ H01R *4/48*

U.S. Cl. 339—95 D **15 Claims**



12. A self-clamping electrical connecting device comprising an insulating housing, at least one entrance passage for inserting a conductive core of a lead, a U-shaped metal guide member and a leaf spring member having a portion angled with respect to the axis of said entrance passage and extending between legs of said U-shaped guide member, said angled portion of said leaf spring member being adapted to clamp upon insertion the conductive core of the lead against one of the legs of said guide member, said leaf spring member comprising resilient clipping means including a bent over resilient portion for clipping said leaf spring member on the other leg of said guide member, a fulcrum zone being formed between the angled portion and the bent-over resilient portion, said fulcrum zone bearing against the inner surface of said other leg, and said bent-over resilient portion comprising a flat part bearing against the outer surface of said other leg.

4,397,515

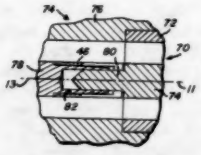
CENTER CONDUCTOR ELEMENT FOR FEMALE MICROWAVE COAXIAL CONNECTOR

Thomas J. Russell, Sunnyvale, Calif., assignor to Krytar, Inc., Santa Clara, Calif.

Continuation of Ser. No. 97,734, Nov. 26, 1979. This application Mar. 16, 1981, Ser. No. 243,815

Int. Cl.³ H01R *17/18*

U.S. Cl. 339—177 R **5 Claims**



1. In an ultra-high frequency coaxial connector for frequencies above 18 GHz, in which a male connector unit and a female connector unit, each having an outer conductive shell and a center conductor of substantially the same external uniform diameter insulatively supported within the outer shell, are connected to one another, and in which the ends of the center conductors terminate in male and female portions, and in which the male portion has a cylindrical forward portion of a first reduced diameter terminating in a tapered point, the junction between the two diameters forming a first annular radial shoulder, the improvement in the female portion comprising:

a cylindrical female element having an integral tubular forward portion of a second reduced external diameter and an internal diameter selected to slidingly receive the cylin-

drical forward portion of said male element, the junction between the two diameters forming a second annular radial shoulder, said external surface of said tubular forward portion having a cylindrical section commencing at said second annular shoulder and a tapered section terminating at the end of said tubular forward portion; and

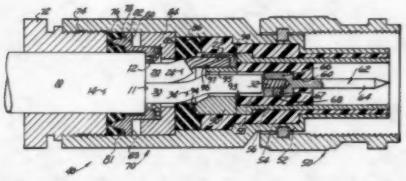
a tubular contact finger sleeve of said uniform diameter for its external surface and having an internal diameter which is selected to slidingly fit over said tubular forward portion, said sleeve terminating in a plurality of spring fingers which are coextensive with said tapered section and extend beyond the end of said tubular forward portion, said fingers being located and biased and shaped so as to conductively contact the cylindrical forward portion of said male element proximate said first annular shoulder when said male and female elements are mated, said tapered section allowing said fingers to be inwardly spring biased for a good electrical contact with the cylindrical forward portion of said male element.

4,397,516

CABLE TERMINATION APPARATUS

David H. Koren, Sidney; Allan B. Kirby, Sidney Center, and Donald H. Gould, Sidney, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 26, 1981, Ser. No. 267,159
Int. Cl.³ H01R *17/08*
U.S. Cl. 339—177 R **4 Claims**



1. A cable termination apparatus (**90**) for use in locating and terminating an electrical cable (**10**) of the twinaxial type to an electrical connector (**50**), the cable (**10**) including a pair of insulated wires (**20, 30**) having inner conductors (**22, 32**), each of the wires (**20, 30**) having a forward end portion of its insulation removed to expose its respective inner conductor (**22, 32**) for termination, said apparatus characterized by:

a generally cylindrical body (**91**) of conductive material having an outer surface (**92**) and axially spaced forward and rearward faces (**93, 94**), said body (**91**) including a passage (**95**) extending between the faces for passing one of said wires (**30**) therethrough whereby the exposed innner conductor (**32**) thereof is terminated externally of the locator and a slot (**96**) for receiving the exposed end of the inner conductor (**22**), said passage (**95**) including a generally uniform portion extending from the forward face (**93**) rearwardly and a generally frusto-conical portion (**97**) extending from the rear face (**94**) forwardly, said slot (**96**) extending axially between the faces and radially into the outer surface (**92**), the slot intersecting with the frusto-conical portion to provide the exposed end of the inner conductor (**22**) with a stress relief when the exposed end is terminated within the slot.

4,397,517

REPAIRABLE CONNECTOR

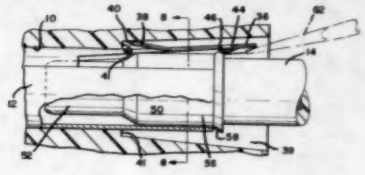
Howard R. Shaffer, Millersburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 22, 1981, Ser. No. 266,553
Int. Cl.³ H01R *13/42*
U.S. Cl. 339—217 S **12 Claims**

1. An electrical connector of the type comprising an insulating housing having a mating face and a wire-entry face, a contact receiving cavity extending through said housing and between said faces, an electrical contact terminal in said cavity, said terminal having a contact portion which is proximate to said mating face and a wire connecting portion which is proximate to said wire-entry face, a wire extending into said cavity at said wire-entry face, said wire having its end portion connected to said terminal in said wire connecting portion, said connector being characterized in that:

said wire-connecting portion of said terminal is a hollow cylinder having a circular end edge which is adjacent to said wire entry face,

said end portion of said wire has a cylindrical ferrule thereon, said ferrule having an outside diameter which is substantially equal to the inside diameter of said wire-connecting portion, said ferrule being received in said wire-connecting portion,



said wire-connecting portion has a pair of spaced-apart axially extending slots extending from said end edge, the segment of said wire connecting portion which is between said slots being flexible radially outwardly with respect to said wire connecting portion,

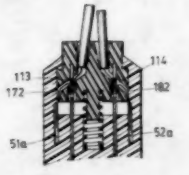
a ferrule retaining stop on the internal surface of said segment, said ferrule retaining stop being against a complementary stop on said ferrule and preventing movement of said ferrule from said wire connecting portion of said terminal, said ferrule being intentionally removable from said wire connecting portion upon flexing said segment radially outwardly thereby to disengage said ferrule retaining stop from said complementary stop.

4,397,518

PUSH-TYPE WIRE TERMINATING APPARATUS

Jing-Hwang Tsai, 83 Chang-Shi St., Sec. 1, An-Nan District, Taiwan, Taiwan

Filed Dec. 19, 1980, Ser. No. 218,189
Int. Cl.³ H01R *13/06*
U.S. Cl. 339—255 R **11 Claims**



11. A wire terminating apparatus comprising: a member having at least one opening formed therein for receiving at least one wire to be terminated, at least one wire channel in communication with each of said at least one opening and at least one guide opening axially formed in said member and intersecting each said wire channel;

at least one conductor movably disposed in each said guide, each said conductor having an opening therein adjacent an end thereof, said conductor opening aligning with said wire channel in a first given position of said conductor relative to said member; and

elastic means for urging said conductor from said first given position to a second given position whereat said conductor opening no longer aligns with said wire channel;

each said guide opening being sized to receive both the conductor disposed therein and a portion of the wire when routed through the opening in the conductor disposed therein and when said conductor is in said second given position.

4,397,519

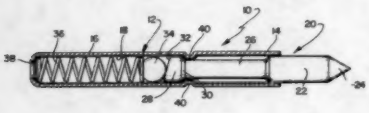
ELECTRICAL CONTACT CONSTRUCTION

James S. Cooney, Attleboro, Mass., assignor to Pylon Company, Inc., Attleboro, Mass.

Filed May 12, 1981, Ser. No. 262,842

Int. Cl.³ H01R *11/22*

U.S. Cl. 339—255 R **5 Claims**



1. An electrical contact construction, comprising an elongated tubular body portion formed of a metal material and being open at least at one end to expose the interior bore thereof, a metallic plunger extending into said bore in sliding relation therein and having an enlarged inner plunger portion joined to the inner end thereof, an outer contact plunger portion formed on the exterior end of said plunger for engagement with an exteriorly located contact, a spring located in said bore and being operative to normally urge said plunger in an outwardly direction for exposing said outer contact plunger portion, and retaining means formed in said body portion and being engageable with said plunger for preventing said plunger from sliding outwardly of said body portion, said retaining means including a plurality of spaced inwardly directed projections which define an interrupted annular ring substantially perpendicular to the longitudinal axis of said body portion, the longitudinal dimension of each of said projections extending in the direction of the ring and being greater than the lateral dimension thereof.

4,397,520

AFOCAL REFRACTOR TELESCOPES

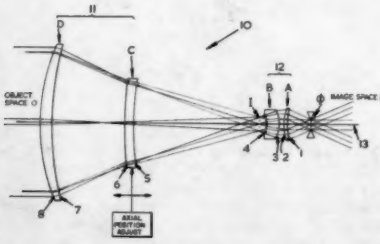
Iain A. Neil, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Filed Feb. 25, 1981, Ser. No. 237,981

Claims priority, application United Kingdom, Mar. 5, 1980, 8007407

Int. Cl.³ G02B *1/02, 9/10, 23/00*

U.S. Cl. 350—1.4 **8 Claims**



1. An afocal refractor telescope formed by a fixed focus achromatic objective system and a fixed focus eyepiece system aligned on a common optical axis and arranged to provide an internal real image, said objective system being formed by two lens elements and said eyepiece system being formed by two lens elements, each of the four lens elements being made of a material which has a useful spectral bandpass in the infrared wavelength region, and having refractive surfaces intercepting said optical axis which are substantially spherical, that one of the objective system lens elements which is proximal the eyepiece system being colour corrective, with a V-value of not less than 120, negatively powered, and having a lower refractive index than the other objective system lens element which is positively powered.

4,397,521

DOUBLE PASS OPTICAL SYSTEM FOR RASTER SCANNERS

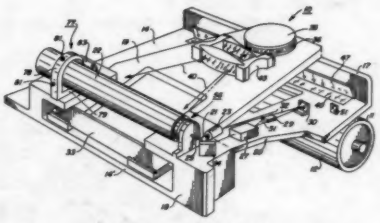
Ronald L. Antos, Webster, N.Y.; Harry P. Brueggemann, San Marino, and David A. Grafton, Santa Monica, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,979

The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.8 **5 Claims**



1. In a raster scanner, the combination of:

(a) a source of a high intensity beam of light;

(b) a first mirror for intercepting said beam and reflecting said beam forward along a downwardly inclined slope;

(c) a second mirror for intercepting the beam from said first mirror and folding said beam so that said beam is reflected backwards along a substantially horizontal plane;

(d) a polygon for scanning said beam through a predetermined scan arc; and

(e) a third mirror for intercepting the beam reflected from said second mirror and folding said beam so that said beam is reflected forward along an upwardly inclined slope toward said polygon;

(f) said polygon intercepting the beam from said third mirror and reflecting said beam downwardly along said slope back to said third mirror;

(g) said third mirror intercepting said scan beam from said polygon and reflecting said scan beam forward along said horizontal plane to the object to be scanned.

4,397,522

OPTICAL FIBRE CONNECTOR

David T. Parr, Croft near Warrington, England, assignor to BICC Public Limited Company, London, England

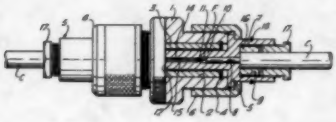
Filed Sep. 17, 1980, Ser. No. 188,075

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.21 **12 Claims**

1. A method of connecting two optical fibres end to end using two optical fibre connector components each of the kind including an elongate tubular housing, at least three elongate members of substantially the same cross-sectional shape and size as one another supported longitudinally side by side within the tubular housing and having adjacent arcuate surfaces which bound between them an intersticial space into which an end part of an optical fibre can be inserted and, associated with

the elongate members, means for compressing the elongate members about the optical fibre to align the optical fibre along and secure it in the interstitial space, each tubular housing of the optical fibre connector component being of a metal or metal alloy having a substantially greater coefficient of thermal expansion than that of the material of the elongate members in the tubular housing, which method comprises the steps of heating each tubular housing to a temperature sufficient to cause the housing to expand radially outwardly to permit radial separation of the elongate members and so facilitate insertion of an optical fibre into an end of the interstitial space



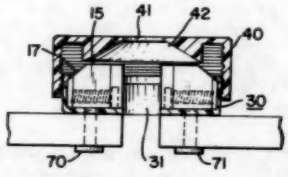
bounded by the elongate members, introducing an optical fibre into the interstitial space of each heated tubular housing, cooling the tubular housing or permitting the tubular housing to cool to cause the housing to contract radially inwardly to compress the elongate members inwardly and cause them to grip the optical fibre in such a way that it is aligned substantially axially in the interstitial space, inserting the optical fibre connector components into opposite ends of the bore of a tubular body; and urging the connector components axially towards one another until said optical fibres therein substantially abut.

4,397,523

UNIVERSAL CABLE SOCKET APPARATUS PARTICULARLY ADAPTED FOR USE WITH FIBER OPTIC CABLES

Richard E. Feinbloom, New York; Richard Lepczynski, Brooklyn, and Wladyslaw Oleksy, New York, all of N.Y., assignors to Designs for Vision, Inc., New York, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,716
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **10 Claims**



1. An adjustable connector apparatus for accomodating various diameter fiber optic cable assemblies to be exposed to a source of light contained within a housing upon which said connector apparatus is mounted comprising:

(a) a first housing section having an aperture and having on a top surface a plurality of transverse slots each communicating with said aperture and each extending transverse thereto, said housing having a threaded outer peripheral portion,

(b) a plurality of clamp members, each having a sloping back wall and having an internal hollow contiguous with an open bottom end, each separate one positioned within an associated one of said slots with said back wall facing the outer periphery of said first housing section with a spring in each hollow,

(c) means located in each slot and adapted to coact with each spring in said slot to compress the same when the associated clamp member is moved towards said aperture,

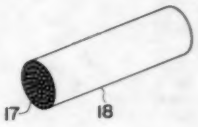
(d) a second housing section having an aperture coaxial with said aperture in said first housing and having a downwardly depending circular sloping flange positioned about said aperture, with the inner periphery of said housing threaded so that when emplaced upon said first housing said second housing can rotatably move towards or away from said slots, with said flange coacting with the back wall of each clamp member to push said members into said aperture for one direction of rotation and to allow said clamp members as biased by said springs to move out of said aperture for the oppposite direction of rotation.

4,397,524

IMAGE-TRANSMITTING BUNDLED OPTICAL FIBERS

Kozo Yoshimura; Takenobu Higashimoto, and Tetsuji Ono, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 12, 1979, Ser. No. 74,698
Claims priority, application Japan, Sep. 15, 1978, 53-113992
Int. Cl.³ G02B 5/17
U.S. Cl. 350—96.25 **15 Claims**



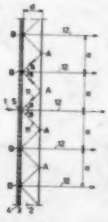
11. An image guide comprising a plurality of elemental image fibers assembled without randomization to form picture image elements of said image guide, a cladding layer surrounding said image fibers, and a layer of light-absorbing material surrounding said cladding layers and comprising a metal selected from the group consisting of Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Mo, Rh, La, Ce, Nd and W and a halide of Si doped with one of said metals for increasing the coefficient of light absorption of the light-absorbing layer.

4,397,525

DEVICE FOR DIVIDING A LASER BEAM

Hans O. S. Ahlen, Sollentuna, Sweden, assignor to Institutet för Optisk, Stockholm, Sweden

PCT No. PCT/SE81/00156, § 371 Date Jan. 26, 1982, § 102(e) Date Jan. 26, 1982, PCT Pub. No. WO81/03551, PCT Pub. Date Dec. 10, 1981
PCT Filed May 26, 1981, Ser. No. 346,041
Claims priority, application Sweden, May 28, 1980, 8003968
Int. Cl.³ G02B 5/18
U.S. Cl. 350—162.17 **10 Claims**



1. Device for dividing a light beam into a plurality of beams, or for combining a plurality of beams into a beam, characterized by a transparent substrate with two planar parallel surfaces, a grating on one of the two said surfaces of the substrate, and a reflecting layer on the side of the grating facing away

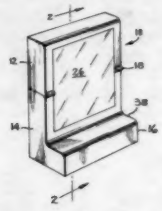
from the substrate a beam diffracted by the grating being arranged for total reflection at the other of the substrate's two said surfaces.

4,397,526

FOLDABLE MIRROR

Gary E. Van Deursen, Upper Saddle River, N.J., assignor to General Electric Company, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,825
Int. Cl.[3] G02B *5/10*
U.S. Cl. 350—310 8 Claims



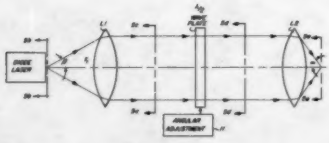
1. A foldable mirror comprising,
a peripheral two-piece frame,
a pair of oppositely disposed hinges connecting said pieces,
said frame including a pair of stacked channels forming an E in cross section with said hinges disposed at the center end of the E at the periphery so the frame pieces fold booklike on each other with the stacked channels forming a single enclosed large channel,
a non-glass single flexible sheet of reflecting mirror material with its back surface secured in the frame between said hinges,
said hinges centerline falling substantially in the same plane as the reflective surface,
whereby on folding the frame upon itself the mirror forms a tear drop fold disposed and protected in said large channel to prevent permanent mirror distortion.

4,397,527

APPARATUS FOR USE IN CORRECTING BEAM ANAMORPHICITY BY VECTOR DIFFRACTION

Frederick F. Geyer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,184
Int. Cl.[3] G02B *13/08*
U.S. Cl. 350—400 21 Claims



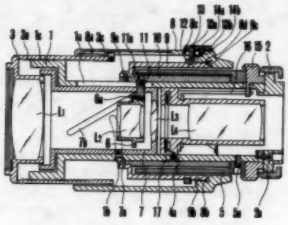
1. Apparatus comprising:
(a) a radiation source for producing an anamorphic output beam of optical radiation that is linearly polarized along its major axis;
(b) means for collimating said output beam of radiation;
(c) means for rotating the direction of polarization of said collimated beam of radiation to produce a polarization rotated, collimated beam of radiation; and
(d) an optical lens having a numerical aperture greater than about 0.5 for focusing said polarization rotated, collimated beam of radiation to a spot,
thereby forming a focused spot of optical radiation that is less anamorphic than the output beam of said radiation source.

4,397,528

ZOOM LENS ASSEMBLY WITH SINGLE OPERATIONAL MEMBER AND MEANS TO PROHIBIT DEFOCUSSING WHILE ZOOMING

Shigeru Kamata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1981, Ser. No. 283,894
Claims priority, application Japan, Jul. 21, 1980, 55-102916[U]
Int. Cl.[3] G02B *7/10*
U.S. Cl. 350—429 9 Claims



1. A lens assembly having a single operational member rendered operative in two directions with respect to an optical axis to perform distance adjustment for focusing and zooming, comprising:
(a) focusing means of said lens assembly and a lens holding member holding a focusing optical lens, said focusing means controlling the axial movement of said lens holding member for focusing said focusing optical lens in response to rotation of said single operational member about said optical axis;
(b) zooming mechanical means responsive to zooming operation for performing a magnification varying function and an image shift compensating function simultaneously and arranged to avoid movement of said focusing lens group when said zooming operation is performed; and
(c) means for prohibiting said single operational member from effecting focusing actuation while allowing it to perform zooming actuation.

4,397,529

ILLUMINATION SYSTEM FOR MICROSCOPES

Akio Taira, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1981, Ser. No. 251,542
Claims priority, application Japan, Apr. 7, 1980, 55/45390
Int. Cl.[3] G02B *21/08*
U.S. Cl. 350—526 13 Claims

1. An illumination system for microscopes comprising a light source, a collector lens, an aperture stop arranged in the vicinity of an image of said light source formed by said collector lens, a field stop arranged on the object side of said collector lens between said light source and aperture stop, condenser lens, and relay lens system for high magnification level to be arranged between said aperture stop and said condenser lens so as to form an image of said light source image in the vicinity of

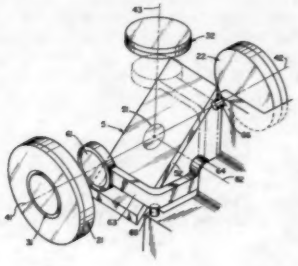
the front focal point of said condenser lens for illumination for microscopy at the high magnification level, said illumination system being so adapted as to remove said relay lens system for high magnification level and said condenser lens out of the optical path and arrange a relay lens system for low magnification level so as to locate the front focal point thereof in the vicinity of said light source image for microscopy at a low magnification level, an image of said field stop being formed on an object to be observed by said condenser lens and relay lens system for high magnification level, and said image of said field stop being formed on the object to be observed by said relay lens for low magnification level at the low magnification level.

4,397,530

OBJECTIVE WITH SEVERAL FIELDS

Jean-Michel Baluteau, Livry-Gargan, France, assignor to Societe d'Optique, Precision Electronique et Mecanique, Paris, France

Filed Sep. 3, 1980, Ser. No. 183,970
Claims priority, application France, Sep. 7, 1979, 79 22490
Int. Cl.³ G02B *23/08*
U.S. Cl. 350—541 **10 Claims**



1. Objective comprising
(a) at least one set **(21, 31)** of at least one lens centered on a common optical axis **(41)**;
(b) a fixed reflector element **(5)** located downstream of this set, with respect of the direction of propagation of the light, so as to reflect a light beam coming from said set **(21, 31)** along an optical axis **(43)** towards at least one optical element **(32, 33, 34, 9, 8)** of a first channel, said reflector permitting the passage of a light emanating from said set **(21, 31)** towards at least one optical element **(22, 71, 73, 74, 8)** of a second channel;
(c) a movable component **(61)** comprising at least one lens and means for moving this component between a position located between said set **(21, 31)** of at least one lens and said reflector element **(5)** where it is centered on the said common optical axis **(41)**, and a position located downstream of said reflector element **(5)** where it is centered on the said optical axis **(43)** of said second channel.

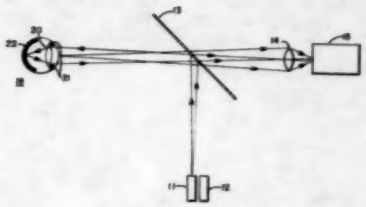
4,397,531

EYE CLOSURE DISCRIMINATION SYSTEM

David E. B. Lees, Lexington, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 29, 1981, Ser. No. 278,525
Int. Cl.³ A61B *3/14*
U.S. Cl. 351—210 **10 Claims**

1. A system for determining whether an eye within a field of view is closed for a predetermined period of time and for distinguishing between reflections from an open eye and any specular reflections within the field of view, comprising:
detection means for viewing the field of view;
a first light source positioned so that light arising from the light source causes reflections from both an open eye and from any specular reflectors within the field of view to be detected by the detection means;
a second light source positioned so that light arising from the light source causes reflections from the open eye to be directed so as not to be detected by the detection means and so that light arising from the light source causes reflections from any specular reflectors in the field of view to be directed so as to be detected by the detection means;



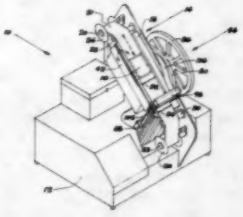
the detection means comprising means for comparing over a predetermined period of time the number of reflections arising from the first and second light sources;
whereby, if the number of reflections arising from first and second light sources are equal during the predetermined period of time, it is assumed that the eye was closed for the predetermined period of time.

4,397,532

FILM EDITING DEVICE

Clarence M. Webb, 505 Orchard Rd., Elizabethton, Tenn. 37643

Filed May 18, 1981, Ser. No. 264,418
Int. Cl.³ G03B *21/00, 1/04*
U.S. Cl. 352—129 **13 Claims**



1. A film editing device for viewing frames of a roll of photographic film and marking selected frames for printing, said device comprising:
a film viewing table;
a film viewing window mounted in said film viewing table and being dimensioned to display film of at least first and second sizes;
a film supply disposed on one side of said film viewing window for holding and supplying film to said film viewing window for display thereon;
a film take-up disposed on the other side of said film viewing window from said film supply for receiving and storing film after it has been viewed on said film viewing window;
means for moving the film from said film supply across said film viewing window and to said film take-up;
a first alignment light source disposed on said film viewing table for selectively emitting light, said first alignment light source being positioned for use in aligning a marginal edge of a selected frame of film of the first size in a desired position on said film viewing table; and
a second alignment light source disposed on said film viewing table for selectively emitting light, said second alignment

light source being positioned for use in aligning a marginal edge of a selected frame of film of the second size in a desired position on said film viewing table.

4,397,533

PHOTOGRAPHIC LIGHT MEASURING DEVICE

Kazuhiko Naruse, Sakai; Yoshio Yuasa, Kawachi-Nagano, and Norio Ishikawa, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 199,102, Oct. 20, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 315,135

Claims priority, application Japan, Nov. 20, 1979, 54-151186

Int. Cl.³ G03B 7/08

U.S. Cl. 354—23 D **6 Claims**

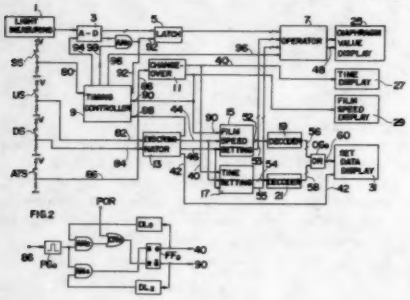


FIG.2

1. A photographic light measuring device comprising:

means for detecting light of an object and generating an output signal as a function thereof;

A-D converter means for converting said output signal into a digital signal;

a first setting means for generating a first digital set signal representative of first manually set data;

a second setting means for generating a second digital set signal representative of second manually set data;

varying means for selectively controlling said first and second setting means for varying said first and second digital set signals in response to a manual operation;

calculation means for calculating with said digital signal from said A-D converter means, said first set digital signal and said second set digital signal, and generating a calculation output signal as a result of the calculation;

a first indication means for indicating data commensurate with said calculation output signal;

a second indication means for selectively indicating either one of the data commensurate with said first and second digital set signals; and

selection means for selecting the data to be indicated by said second indicating means.

4,397,534

DEVICE FOR DISPLAYING BULB PHOTOGRAPHING OPERATION TIME IN A PHOTOGRAPHIC CAMERA

Nobuaki Sakurada, Yokohama; Nobuaki Date, Kawasaki; Masami Shimizu, Tokyo, and Hiroshi Aizawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 261,803, May 8, 1981, abandoned. This application May 19, 1982, Ser. No. 379,910

Claims priority, application Japan, May 14, 1980, 55-63792

Int. Cl.³ G03B 7/08

U.S. Cl. 354—23 D **4 Claims**

1. A display device for a photographic camera, comprising:

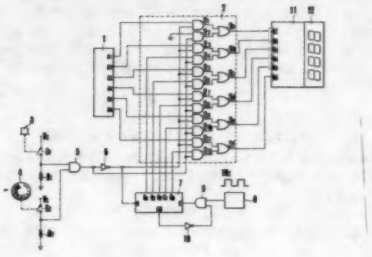
(a) means for producing a release signal in response to a release operation of the camera;

(b) means for producing a bulb phtographing setting signal in response to setting of a bulb photographing mode of camera operation;

(c) a counter for counting a number of input pulses and providing a counter output;

(d) a decoder for decoding the output of the counter;

(e) display means for displaying the output of the counter; and



(f) control means for enabling the display means to display the output of the counter the content of which varies successively, when both of the release signal and the bulb photographing setting signal are applied to input terminals of the control means.

4,397,535

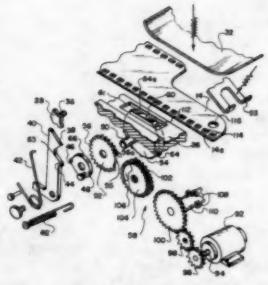
FILM THREADING APPARATUS

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 186,772, Sep. 12, 1980, abandoned. This application Jan. 13, 1982, Ser. No. 339,262

Int. Cl.³ G03B 1/20

U.S. Cl. 354—212 **6 Claims**



1. In a photographic camera of the type having (a) a supply chamber for receiving a film cassette, (b) a take-up chamber spaced from said supply chamber, (c) a passageway between said chambers for receiving a film leader extending from the cassette, and (d) means in said take-up chamber for capturing the leader, the improvement comprising:

a film threading member having an outer continuous surface including a film engagable section and a non-film engagable section, said threading member being revolvable to alternately position its film engagable section in said passageway and its non-film engagable section opposite said passageway; and

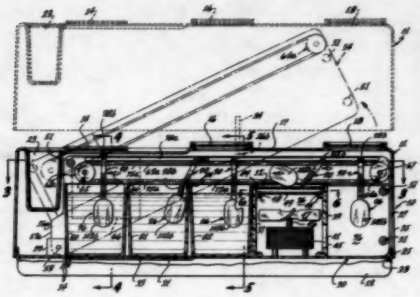
means, coupled with said threading member, for first revolving said threading member to move its film engagable section for engaging and advancing the film leader to said capturing means, and for then terminating revolution of said threading member with its non-film engagable section opposite said passageway.

4,397,536

AUTOMATIC CONVEYOR FOR DENTAL FILM CHIP PROCESSING

Ernst Zwettler, 1108 19th St., Santa Monica, Calif. 90403

Filed Aug. 3, 1981, Ser. No. 289,409
Int. Cl.³ G03B 3/08
U.S. Cl. 354—322 15 Claims



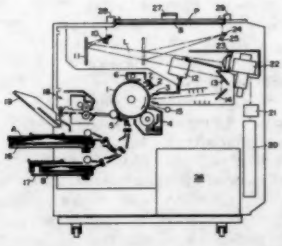
1. A processor for dental film chips comprising:
a base;
a series of tanks containing processing solutions positioned on said base;
longitudinally extending vertical sidewalls disposed on said base on either side of said series of tanks;
a pair of sprockets mounted on the inner upper front and rear corners of each of said sidewalls;
endless belts looped about each of the pairs of sprockets;
said belts having teeth on the outer surfaces thereof;
a motor for driving said sprockets to advance said belts;
a towbar having transversely disposed side arms;
a film holder for film chips;
said film holder pivotally coupled to the lower end of said towbar; and
said towbar positioned with its arms lying on the teeth of the endless belts and with said pivotally held film holder suspended in the solution in the first tank of the series of tanks;
whereby as said belts advance they pull the towbar and thereby drag the film holder through the solution of and over the end wall of each of the tanks into the following tank in the series.

4,397,537

IMAGE FORMING METHOD AND APPARATUS

Yasuyuki Tamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1981, Ser. No. 238,564
Claims priority, application Japan, Mar. 4, 1980, 55-26842
Int. Cl.³ G03G 15/00; G03B 19/00
U.S. Cl. 355—3 R 15 Claims



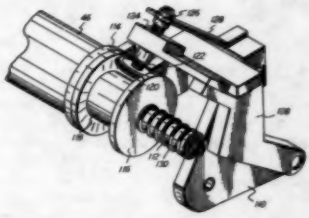
1. An image combining method for forming a combined image on a recording medium based on at least two different types of image information, comprising the steps of:
modulating a light beam in accordance with electrical signal information constituting a first type of image information;
scanning an original carrying a second type of image information with the modulated light beam; and
projecting the light beam, after having scanned the original, onto the surface of the recording medium to thereby effect recording on the surface of the recording medium of the first and second types of image information.

4,397,538

BELT ALIGNMENT SYSTEM

Vittorio Castelli, Scarsdale; Ralph A. Hamaker, Penfield, both of N.Y., and Willard J. Opocensky, Los Angeles, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 3, 1981, Ser. No. 298,982
Int. Cl.³ G03G 15/00; B65G 39/16
U.S. Cl. 355—3 BE 12 Claims



1. An apparatus for controlling the lateral alignment of a belt arranged to move along a predetermined path, including:
means for pivotably supporting the belt, said means for pivotably supporting the belt comprising a frame, an elongated roller, and means, mounted pivotably on said frame, for rotatably holding said roller;
means for sensing lateral movement of the belt from the predetermined path and translating relative to said supporting means in response thereto, said means for sensing comprising:
a shaft extending outwardly from one end of said roller,
a member mounted slidably on said shaft,
a pair of opposed, spaced flanges extending outwardly from said member with said tilting means being interposed between said pair of flanges, and
means for resiliently urging one of said pair of flanges into contact with one edge of the belt; and
means, normally spaced from said sensing means during belt movement along the predetermined path, for tilting said supporting means in response to said sensing means rotating said tilting means so as to return the belt to the predetermined path of movement.

4,397,539

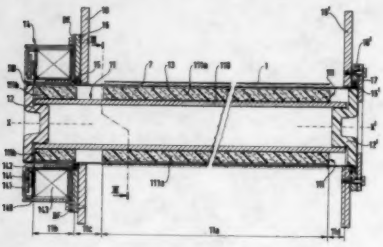
APPARATUS FOR CONSTITUTING A ROTARY MAGNETIC BRUSH

Gerard Normand, Besancon, France, assignor to Societe Anonyme dite Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Dec. 22, 1981, Ser. No. 333,505
Claims priority, application France, Dec. 23, 1980, 80 27346
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 DD 5 Claims

1. Apparatus for constituting a rotary magnetic brush, said apparatus comprising a generally cylindrical member having a longitudinal axis of symmetry and installed so as to rotate about said axis and on whose periphery longitudinally extending magnetic poles are installed to extend parallel to the axis in

a uniformly spaced out configuration with alternating outwardly-directed north and south poles, a tube made of a non-magnetic substance surrounding said member without touching it and intended to have its surface covered along at least a part of its length with particles of magnetic powder, and drive means for making said member rotate inside said tube with a view to forming a rotating layer of particles of said magnetic powder on the surface of the tube, the rotation being obtained by the effect of said magnetic poles rotating inside said tube, said rotating layer of magnetic particles constituting said magnetic brush, wherein said member extends beyond the brush-forming region on which the magnetic particles rotate and has an end drive portion intended not to be covered with said layer of magnetic particles, said magnetic poles extending over said drive portion which co-operates with an electromagnetic stator being a cylindrical surface delimited by magnetic poles arranged so as to cause said member to be driven in rotation by co-operation between the poles of the electromagnetic stator and the poles of said member in said drive portion, thereby constituting said drive means.

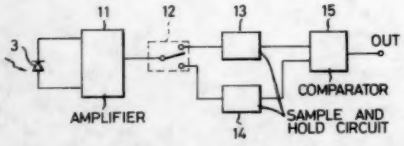


4,397,540

COPYING MACHINE FOR MICROFILM

Yukio Kanazawa, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1982, Ser. No. 337,912
Claims priority, application Japan, Jan. 20, 1981, 56-6720
Int. Cl.³ G03G *15/00, 15/04*
U.S. Cl. 355—14 R **6 Claims**



1. A copying machine, for a microfilm, having an optical system in which an image of a picture on said microfilm is enlarged and projected onto a photosensitive material through a slit member at an image forming point by a lens, comprising;

an optical mechanism for varying a back focal length of said lens in response to a control signal;

control means for generating said control signal so that said optical mechanism varies said focal length so that said lens is first focused on an upper surface and then on a lower surface of said microfilm;

at least one optical sensor located on said slit member for generating a separate light quantity output signal when said lens is focused on said upper and said lower microfilm surfaces respectively;

means for holding said separate light quantity output signals;

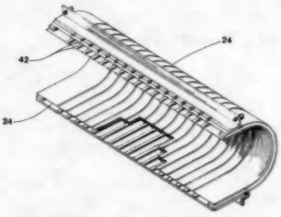
means for comparing said separate light quantity output signals to determine the surface of said microfilm which bears said picture, said comparison means being connected to said control means so that said control means generates an additional control signal so that said optical mechanism sets said back focal length in accordance with the surface of the microfilm bearing said picture.

4,397,541

METHOD AND APPARATUS FOR TRANSPORTING AN ELECTROSTATIC STRIP

Ira Lopata, New York, N.Y., and Robert M. Barto, Jr., Wyckoff, N.J., assignors to Ragen Precision Industries, Inc., North Arlington, N.J.

Filed Apr. 23, 1981, Ser. No. 256,808
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH **5 Claims**



1. An apparatus for forming, toning and displaying the unfused visible electrostatic image on an electrostatic strip, and alternatively and selectively for erasing the electrostatic's image to permit reuse of the electrostatic strip or for fusing the visible electrostatic image to make a permanent copy thereof includes,

a. frame means,

b. a roll of electrostatic strip material rotatably mounted in said frame for providing a source of electrostatic strip material for use in the apparatus,

c. a generally planar surface means on said frame a predetermined spaced distance from said roll of electrostatic strip material having, a viewing station therein, an inlet end at one end of said viewing station, and an outlet end remote from the inlet end to permit an electrostatic strip to be fed across the viewing station in said planar surface means,

d. means to feed said electrostatic strip material from the roll or to rewind the same on said roll, and

e. non-conductive curvilinear reversing guide means mounted in said frame for operative coaction with the feeding and rewinding means and disposed to permit the electrostatic strip to move in one direction into the inlet end of the planar surface means and in the opposite direction to return through the curvilinear reversing guide means when the electrostatic strip is rewound on the roll of electrostatic strip material,

f. said reversing guide means including,

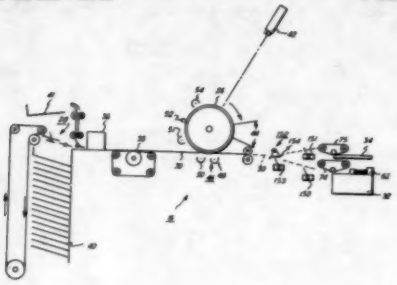
i. spaced guide members defining an electrostatic strip passage therebetween, and

ii. a plurality of longitudinal ribs on the respective opposed faces of the guide members operatively associated for guiding the electrostatic strip between the guide members to and away from the inlet end of the planar surface means whereby the electrostatic strip is prevented from jamming as it moves through the spaced guide members.

4,397,542
XEROGRAPHIC ENVELOPE PRINTING

Gerd R. Brodesser, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 3, 1982, Ser. No. 354,557
Int. Cl.³ G03G 15/00
U.S. Cl. 355—14 R 9 Claims



9. A method for printing envelopes with a xerographic marking engine comprising the steps of:

inserting the envelopes in a holding tray;

sensing the presence of said envelopes in said tray;

modifying the xerographic marking parameters of said marking engine to print envelopes;

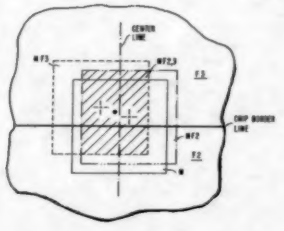
driving said envelopes, one at a time, from said holding tray to a xerographic transfer station for printing; and

stacking said printed envelopes in an output tray.

4,397,543
MASK FOR IMAGING A PATTERN OF A PHOTORESIST LAYER, METHOD OF MAKING SAID MASK, AND USE THEREOF IN A PHOTOLITHOGRAPHIC PROCESS

Hartmut F. Kolbe, Boeblingen, and Frank A. Schwarzbach, Hildrizhausen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1981, Ser. No. 299,703
Claims priority, application European Pat. Off., Dec. 29, 1980, 80 108233.0
Int. Cl.³ G03B 27/52, 27/32
U.S. Cl. 355—40 10 Claims

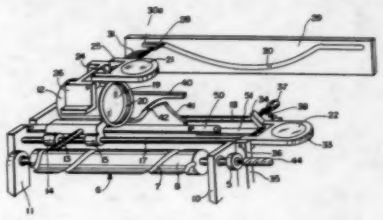


1. Mask for imaging a pattern on a photoresist layer disposed on a semiconductor wafer having border lines separating chip fields, said mask including at least one alignment mark arranged in that mask area corresponding to said border lines on said semiconductor wafer, characterized in that the said at least one alignment mark represents the mean of at least two alignment marks of adjacent mask areas, said mean being the area formed by the one portion of adjacent alignment mark superimposed on a portion of at least one other adjacent alignment mark.

4,397,544
OPTICAL APPARATUS FOR CHANGING MAGNIFICATION OR REDUCTION RATES

Toshiyuki Yajima, and Syuzo Kimura, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Aug. 28, 1981, Ser. No. 297,205
Claims priority, application Japan, Aug. 31, 1980, 55-123897[U]; Aug. 31, 1980, 55-123900[U]
Int. Cl.³ G03B 27/36, 27/38
U.S. Cl. 355—58 11 Claims



1. In an optical apparatus for changing magnification and/or reduction ratios at which copies of originals are produced, comprising a main lens assembly movable along an optical path and first and second supplemental correcting lens elements adapted alternatively to move into the optical path and to cooperate with said main lens assembly at fixed positions; the improvement comprising:

a main lens support frame holding said main lens assembly;

a main lens carriage in which said main lens support frame is slidably mounted;

supporting means for supporting said main lens carriage for movement along the optical path;

a driving motor for moving said main lens carriage along the optical path;

motor control means for deenergizing said driving motor when said main lens carriage reaches a predetermined position;

a first support frame for holding said first supplemental correcting lens element;

a second support frame for holding said second supplemental correcting lens element and attached to said main lens carriage;

a first cam plate fixedly attached to said main lens carriage so as to move therewith and having a camming groove which causes said first support frame to move into and out of the optical path; and

a second cam plate extending along the moving direction of said main lens carriage and having a camming groove which causes said second support frame to move into and out of the optical path.

4,397,545
EXPOSURE CONTROL METHOD

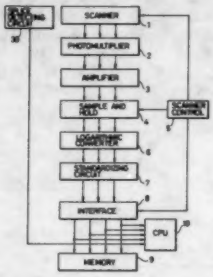
Takaaki Terashita, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 29, 1981, Ser. No. 258,699
Claims priority, application Japan, Apr. 30, 1980, 55-57262; Apr. 30, 1980, 55-57263
Int. Cl.³ G03B 27/32
U.S. Cl. 355—77 9 Claims

1. In a picture processing method of the type comprising the steps of determining exposure data for a particular picture to be processed, correcting said exposure data in accordance with exposure data of at least one other picture to obtain corrected exposure data, and processing said particular picture in accordance with said corrected exposure data, the improvement characterized in that said correcting step comprises:

determining the degree of similarity between said particular picture and said at least one other picture;

weighting the exposure data of said at least one other picture in accordance with the determined degree of similarity to obtain weighted exposure data; and



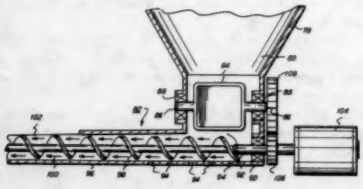
combining said particular picture exposure data and weighted exposure data to obtain said corrected exposure data.

4,397,546

PARTICLE DISPENSING SYSTEM

Lowrie W. Burdette, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 18, 1982, Ser. No. 340,131
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **6 Claims**



1. An apparatus for discharging particles into the chamber of a housing storing a supply of developer material therein, including:

means for storing a supply of particles therein;

an enclosure having an entrance port in communication with said storing means for receiving particles therefrom and a plurality of substantially equally spaced apertures therein for dispensing particles therefrom;

a trough having an entrance port coupled to said enclosure and a sloping, edge located remotely from the apertures in said enclosure, for discharging the received particles into the chamber of the housing;

a helical member mounted rotatably in said trough; and

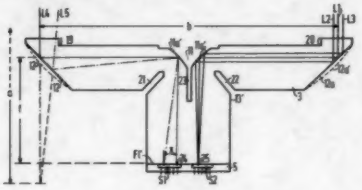
means for rotating said helical member relative to said trough to move the received particles therealong for discharge over the sloping edge thereof to the remaining developer material in the chamber of the housing.

4,397,547

LENS MODULE FOR AN OPTO-ELECTRONIC RANGE FINDER

Hans-Peter Grassl, Zorneding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,468
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009535
Int. Cl.³ G01C *3/10*; G03B *7/08*
U.S. Cl. 356—1 **7 Claims**



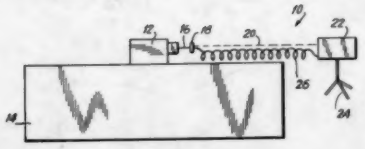
1. A lens module for double deflection of incident light from an object for projecting two images of the object respectively on two linear image sensors of an opto-electronic range finder, said image sensors being disposed in a single image plane, said lens module comprising a prismatic body consisting of transparent material having a trapezoidal base with a longer side disposed nearer said object and a parallel shorter side and two non-parallel angled sides, said base having a V-shaped notch in a central portion of said longer side, said notch having concave lateral surfaces, said prismatic body further having a projection extending from a central portion of said shorter side of said base, said projection having two spaced light exit ports at a bottom thereof, and said prismatic body further having two light entrance ports disposed at opposite ends of said longer side, whereby light from said object enters said lens module through each of said light entrance ports and is doubly deflected by each of said non-parallel sides of said base and the lateral concave surfaces of said V-shaped notch toward said light exit ports and is simultaneously focussed at said respective light exit ports by said lateral concave surfaces.

4,397,548

DISTANCE MEASURING SYSTEM

Ray G. McCormack, St. Joseph, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1980, Ser. No. 217,335
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—5 **3 Claims**



1. Apparatus for measuring a variable distance between a first point and a second point comprising:

means at said first point for providing a modulated beam of light;

means for directly transmitting said first modulated beam of light said distance to said second point;

an optical fiber having a substantially fixed optical path length;

said optical fiber being effective to transmit said second

modulated beam over said substantially fixed optical path length from said means for splitting to said second point;

said optical fiber being disposed adjacent said first beam of light the full distance between said first and second points;

means at said second point for separately recovering modulation from said first and second modulated beams to produce first and second modulation signals respectively; and

means for comparing a phase of said first and second modulation signals to determine said variable distance.

4,397,549

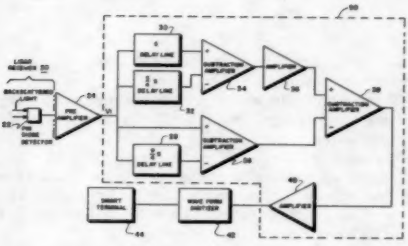
METHOD FOR REMOVAL OF LIDAR BACKGROUND BACKSCATTERING BY SUBTRACTION OF MULTIPLE-DELAYED RETURN SIGNAL

Clifford E. Morgan, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 27, 1981, Ser. No. 248,629

Int. Cl.³ G01C *3/08*; G01N *21/00*

U.S. Cl. 356—5 **11 Claims**



1. A multiple-delayed light detecting and ranging (LIDAR) pulse signal processor system for receiving and processing a plurality of LIDAR return pulses transmitted from a LIDAR transmitter for recovering a very weak atmospheric turbulence feature of interest by removing the $1/R^2$ variation of the background aerosol backscattering of each LIDAR pulse by the homogeneous atmosphere so that the background signal is effectively constant with range; said system comprising:

a LIDAR receiver comprised of a detector for detecting each LIDAR return pulse from the atmosphere and a preamplifier that amplifies said LIDAR return pulse;

a multiple-delayed LIDAR pulse signal processor comprised of a plurality of separate delay lines and a plurality of summing amplifiers for dividing each LIDAR return pulse into a multiple of delayed pulses which are identical to said LIDAR return pulse but each having a different delay time wherein said multiple of delayed pulses are summed in pairs by said plurality of summing amplifiers until there is a single output signal in which the $1/R^2$ variation of the background aerosol backscattering of each LIDAR pulse is removed and said single output signal is amplified by a large gain amplifier to recover said very weak atmospheric feature of interest; and

display means for showing amplified weak atmospheric turbulence feature of interest with said $1/R^2$ variation of background backscattering sufficiently suppressed that the weak atmospheric turbulence feature of interest may be detected from very close range to infinity for analyzing and determining the position of the source causing said atmospheric turbulence feature of interest.

4,397,550

LASER DOPPLER VELOCIMETER

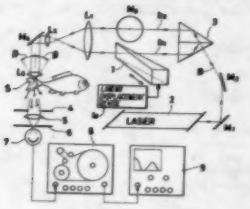
Kiyofumi Matsuda, and Tomoaki Eiju, both of Ibaragi, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Feb. 19, 1981, Ser. No. 236,053

Claims priority, application Japan, Feb. 21, 1980, 55-21166; Nov. 15, 1980, 55-16095

Int. Cl.³ G01P *3/36*

U.S. Cl. 356—28.5 **7 Claims**



1. A laser Doppler velocimeter adapted to determine the velocity of flow of particles in motion by causing two coherent beams to impinge upon one point of the path of said particles thereby producing scattered light and a consequent interference beat, detecting in said interference beat the Doppler frequency due to the Doppler shift caused by the particles in motion and calculating the velocity of motion of the particles based on the Doppler frequency, which velocimeter is provided in the path of one of said two beams with at least one prism having an incident plane arranged perpendicular to the path of the incident beam and a refractive plane being at angles with the incident plane, said prism being adapted to be moved in a direction parallel to the refractive plane for producing continuous change in the length of the beam path therethrough, thereby to modulate the frequency of the beam.

4,397,551

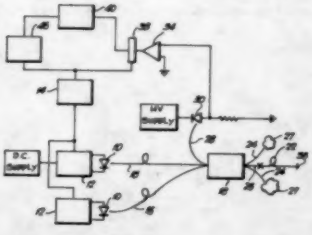
METHOD AND APPARATUS FOR OPTICAL FIBER FAULT LOCATION

Marc Bage, Beloeil, and Johanne Lemay, Kirkland, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 29, 1981, Ser. No. 316,932

Int. Cl.³ G01N *21/88*

U.S. Cl. 356—73.1 **7 Claims**



1. A method of measuring the distance from an input end of a fiber to a discontinuity within the fiber, the method comprising launching a swept frequency optical input signal into the input end of the fiber, the signal having components at wavelengths λ_1 and λ_2 separated by several nanometers, the λ_1 component having a group velocity different from the group velocity of the λ_2 component, receiving at the fiber input end

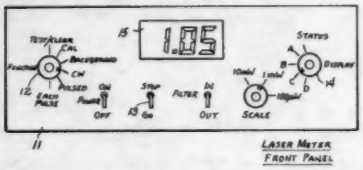
a corresponding interference signal propagating back from the discontinuity, analyzing the frequency spectrum of the interference signal, and, from a frequency related parameter of said frequency spectrum, deriving the distance from the input end to the discontinuity.

4,397,552

INSTRUMENT FOR MEASUREMENT OF EXPOSURE FROM A LASER RADIATION

Jeffrey L. Silberberg, Rockville, Md., assignor to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Filed Oct. 31, 1980, Ser. No. 202,727
Int. Cl.³ G01J 1/44
U.S. Cl. 356—215 24 Claims



LASER METER FRONT PANEL

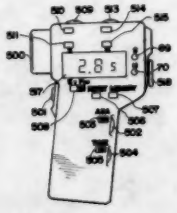
1. An instrument for determining the viewing hazard of a source of visible laser radiation comprising: photoelectric sensing means adapted to be exposed to said source and to generate an intensity signal having a magnitude proportional to the intensity of the visible laser radiation from said source falling on said sensing means; integration means responsive to said intensity signal for producing an energy signal proportional to the energy of said radiation falling on said sensing means; means to measure the time duration of said intensity signal; computer means to compute the energy from said source falling on said sensing means as a function of said energy signal and said measured time duration; and means to compare the computed energy from said source falling on said sensing means with a predetermined energy value, said computer means including means to compute and display the time duration at which the integrated energy output of said source falling on said sensing means first exceeds said predetermined energy value during a predetermined time period.

4,397,553

PHOTOGRAPHIC SPOT MEASURING APPARATUS

Yoshio Yuasa, Kawachinagano, and Kazuhiko Naruse, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 21, 1980, Ser. No. 209,006
Claims priority, application Japan, Nov. 27, 1979, 54-153913
Int. Cl.³ G01J 1/44
U.S. Cl. 356—226 18 Claims



1. A photographic spot measuring device for determining a film exposure for an object relative to a film latitude, said film latitude capable of reproducing various parts of the object with respective possible densities between a pair of density limits, comprising:

means for selectively measuring the luminance of a desired part of the object within a limited acceptance angle;

means for producing a light measuring signal in response to said measuring means; and

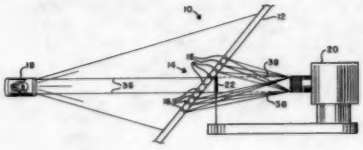
means responsive to said producing means for generating a limit exposure signal to effect an exposure of a film in which the measured part of the object is reproduced on said film with one of said pair of density limits.

4,397,554

TRANSPARENCY HALATION MEASUREMENT METHOD AND APPARATUS

Louis V. Genco, Enon, and Robert G. Eggleston, Oxford, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 7, 1981, Ser. No. 251,823
Int. Cl.³ G01N 23/04
U.S. Cl. 356—239 8 Claims



1. A method of measuring halation in a transparency, comprising the steps of:

(a) projecting light through a given test region of a transparency from a light source positioned on one side of said transparency;

(b) disposing a camera on an opposite side of said transparency with its lens aligned with said light source for receiving light which passes through said transparency test region to produce an image on a photographic film within said camera; and

(c) interposing a filter in the light path between said light source and said lens of said camera, said filter serving to occlude from said camera lens the direct light from said light source such that an image of halation present in said test region of said transparency outside the periphery of said filter may be recorded on said photographic film of said camera.

4,397,555

ARTIFICIAL HORIZON DEVICE

Richard E. Malcolm, Oakville; Harry M. Assenheim, Georgetown; Paul L. Emmett, Willowdale, and Richard Chan, Brampton, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Dec. 1, 1980, Ser. No. 211,954
Claims priority, application Canada, Oct. 20, 1980, 362778
Int. Cl.³ G01C 9/02
U.S. Cl. 356—248 7 Claims

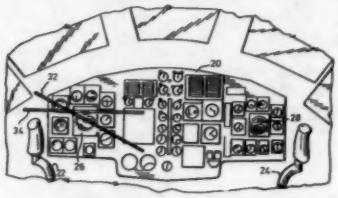
1. An artificial horizon device for use in projecting a light bar in front of an aircraft pilot such that the light bar provides a continuous visual display of the actual horizon relative to the aircraft, the device comprising:

first means adapted to be coupled to the output of the aircraft gyroscope providing roll information and to convert this output to two synchronous roll outputs having waveforms in a first condition in phase and in a second condition 180 degrees out of phase with one another, the first such roll output having a value which is a function of the cosine of the instantaneous angle of roll of the airplane, and the second such roll output being a function of the

sine of the same angle so that the composite plot of values from these outputs would be a straight line defining with a reference line the angle of roll, in the first condition the line having a positive slope and in the second condition the line having a negative slope;

second means adapted to be coupled to the output of the aircraft gyroscope providing pitch information and to convert this output to a pitch output which is in direct proportion to the angular pitch;

means mixing the two roll outputs with the pitch output to provide first and second composite outputs, the instantaneous values of which are respectively functions of the sum of the first roll output and the product of the pitch output and the sine of the angle of roll, and of the sum of



the second roll output and the product of the pitch output and the cosine of the angle of roll;

a light source providing a light beam;

first and second mirrors mounted for oscillatory movement about respective datums, the mirrors including drive means coupled to the respective first and second composite outputs and responsive to these outputs to move the mirrors, the light beam being reflected by the first mirror through about 90 degrees and this reflected light being reflected by the second mirror through about another 90 degrees whereby the mirrors combine to project a light bar positioned with reference to a datum to indicate the position of the true horizon regardless of the orientation of the aeroplane.

4,397,556

MATERIAL-TESTING METHOD AND APPARATUS

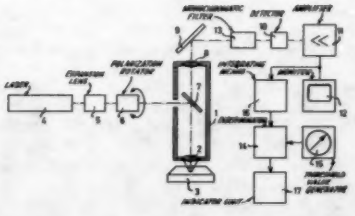
Gerhard Müller, Aalen, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,407

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935812

Int. Cl.³ G01J *03/44*

U.S. Cl. 356—301 **15 Claims**



1. The method of testing a test piece of a given material, wherein the test piece is irradiated with monochromatic light and resulting Raman-scattered radiation is detected in a spectral region that has been selected by prior such observation of reference pieces, and further wherein:

(a) the measured value of the Raman radiation of the reference pieces in at least one spectral region is used to establish a trigger-threshold signal,

(b) comparing, against said trigger-threshold signal and by electronic discrimination, the signal indicative of Raman intensity for the test piece in said spectral region, and

(c) using the output signal of the discriminator to classify the test pieces.

4,397,557

OPTICAL ARRANGEMENT FOR A LIGHT SCATTERING TYPE SMOKE DETECTOR

Thomas Herwig, Schlangenbad, and Ortwin Struss, Wiesbaden-Nordenstadt, both of Fed. Rep. of Germany, assignors to Heimann GmbH, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 215,061

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951459

Int. Cl.³ G01N *21/53*

U.S. Cl. 356—342 **4 Claims**

1. In a light scattering type smoke detector having a test chamber, an optical transmitter for directing radiation toward said test chamber, an optical receiver disposed at an acute angle with respect to said optical transmitter and also directed toward said test chamber for receiving back-scattered radiation from smoke particles present in said test chamber, the improvement for minimizing the structural length of said detector comprising:

a pair of optical lenses respectively disposed in front of said transmitter and said receiver for directing radiation respectively transmitted and received thereby in substantially parallel respective overlapping paths;

a plurality of diaphragms disposed adjacent to said beam paths for intercepting only non-parallel scattered and reflected radiation; and

a light trap associated with each of said transmitter and said receiver disposed at an opposite side of said test chamber for absorbing unscattered and unreflected radiation.

4,397,558

SYSTEM FOR REDUCING THE EFFECTS OF BACKGROUND RADIATION

Henry A. Hill, Tucson, Ariz., and Paul T. Ballard, Kettering, Ohio, assignors to The University of Arizona Foundation, Tucson, Ariz.

Filed Mar. 2, 1981, Ser. No. 238,058

Int. Cl.³ G02B *9/02*

U.S. Cl. 356—354 **50 Claims**

48. A method for reducing the effects of undesired background radiation comprising the steps of passing an incident beam containing desired radiation from a desired radiation source and undesired radiation through means for shifting the wavefront of said undesired radiation in a two-dimensional array having a first value of phase shift and a second value of

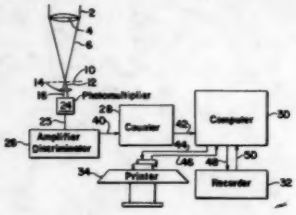
phase shift different than said first value, said two-dimensional array having rows and columns of alternating ones of said first and second phase shift, thereby generating an interference pattern having a two-dimensional array of areas of increased and reduced intensity of the undesired radiation alternated with each other in two dimensions, and concentrating said desired radiation onto a reduced intensity area of said interference pattern, and detecting the desired radiation after it has been passed through said array.

4,397,559

APPARATUS FOR PROCESSING ELECTROMAGNETIC RADIATION AND METHOD

George D. Gatewood, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Feb. 19, 1981, Ser. No. 236,023
Int. Cl.³ G01B *11/14, 11/26;* G01J *1/04*
U.S. Cl. 356—404 **54 Claims**



1. Electromagnetic radiation measuring apparatus comprising

ruling means adapted to be positioned in a beam of said radiation and having a series of substantially transparent first zones, a series of substantially opaque second zones with at least some of said first or second zones disposed in alternating position with respect to the other said zones,

optical coupling means for receiving radiation from said ruling means,

photomultiplier means for receiving radiation from said optical coupling means and emitting responsive electrical pulses,

discriminator means for permitting electrical pulses of predetermined amplitude corresponding to photon events to pass therethrough, and

counter means for counting pulses passing through said discriminator means and emitting a count which is a function of the intensity of the radiation received by said optical coupling means.

4,397,560

PHOTOMETER WITH MICROTRAY WELL POSITION INDICATOR

Richard P. Andresen, Shelburne, Vt., assignor to Bio-Tek Instruments, Inc., Burlington, Vt.

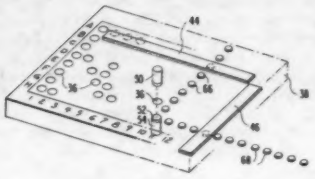
Filed Apr. 23, 1981, Ser. No. 256,648
Int. Cl.³ G01B *7/03*
U.S. Cl. 356—440 **9 Claims**

1. In a photometer of the type having a flat support surface with a single substantially centrally located aperture therethrough, photodetector means for detectin and displaying optical density of different liquids disposed in a plurality of equally spaced apart wells arranged in rows and columns in a microtray adapted to be freely movable over said surface for positioning different wells in alignment with said aperture and said photodetector means and locating means for locating each well in properly aligned relation, the improvement comprising:

carrier means having a rectilinear central opening for receiving and supporting a microtray having a plurality of equally spaced wells in a plurality of rows and columns formed therein,

magnetic means supported by said carrier means, and,

magnetic sensor means associated with said surface in a predetermined pattern relative to said aperture for generating signals capable of identifying a specific well by row and column in alignment with said aperture by the superimposed relation of said magnetic means relative to said magnetic sensor means.

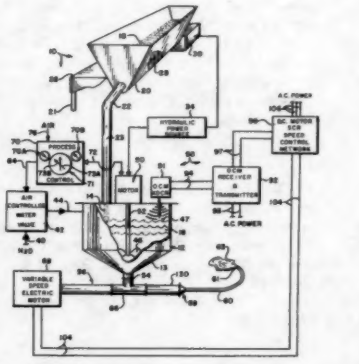


4,397,561

SLURRY PRODUCTION SYSTEM

William A. Strong, Rte. 11, Box 1150, Brinkley Rd., Pine Bluff, Ark. 71611, and Kenneth Church, Pine Bluff, Ark., assignors to William A. Strong, Pine Bluff, Ark.

Filed May 11, 1981, Ser. No. 262,754
Int. Cl.³ B01F *15/04*
U.S. Cl. 366—21 **2 Claims**



1. An automatic, volume controlled slurry production blending and pumping machine comprising:

vat means for receiving a powdered or aggregate raw material and a liquid to be mixed therewith whereby to form a slurry mixture;

remote hopper means for initially periodically receiving raw powdered or aggregate material and mechanical means for conveying said material to said vat means;

agitator means having blade means within said vat means for blending said slurry mixture;

hydraulic motor means for actuating said agitator blade means;

means for sensing hydraulic pressure variations experienced by said hydraulic motor means whereby to derive a pneumatic control signal proportional to slurry viscosity;

valve means for controlling the introduction of liquid into said vat means for receiving a powdered or aggregate raw material, said valve means responsive to said pneumatic control signal whereby liquid flow rate is generally proportional to the viscosity of said slurry mixture;

variable speed pump means for outputting slurry from said vat means; and,

vat head level sensing means for regulating slurry output volume, said vat head level sensing means comprising:

ultrasonic means associated with said vat means for monitoring the slurry mixture; and,

power supply means responsive to said ultrasonic means for variably powering said variable speed pump means for directly controlling slurry output volume independently of slurry viscosity and independently of raw product weight variations experienced by said remote hopper means mechanical conveying means.

4,397,562

DIGITAL-ANALOG CONVERTER CIRCUIT FOR SPEECH-SYNTHESIZING ELECTRONIC TIMEPIECE

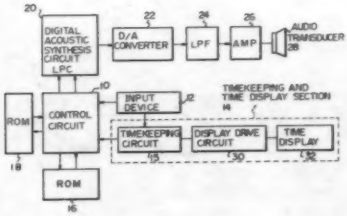
Shinichi Shirasu, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,788

Claims priority, application Japan, Feb. 26, 1980, 55-22981; Apr. 8, 1980, 55-45241

Int. Cl.³ G04B *21/08*

U.S. Cl. 368—63 **20 Claims**



1. An electronic timepiece powered by a battery and having timekeeping circuit means for producing signals indicative of time information, memory means storing data relating to acoustic signal synthesis in digital form, control circuit means coupled to receive said time information indicating signals and responsive thereto for reading out portions of said data stored in said memory means, digital acoustic synthesis circuit means responsive to signals from said control circuit means and said data read from said memory means for generating a succession of digital signals each specifying at least one amplitude during a predetermined time interval of a portion of an acoustic time indication signal required to be audibly reproduced to indicate said time information, and digital-to-analog conversion means, comprising:

pulse width modulation circuit means responsive to successive ones of said digital signals for generating a train of pulses wherein the duration of each pulse is proportional to a numeric value represented by a corresponding one of said digital signals from said digital acoustic signal synthesis means;

pulse amplifier means coupled to receive said pulse train from said pulse width modulation circuit means; and

electro-acoustic transducer means coupled to receive said pulse train from said pulse amplifier means, and responsive thereto for eliminating frequency components of said pulse train which are outside a frequency band containing said acoustic time indication signal and for reproducing said acoustic time indication signal in audible form.

4,397,563

POWER CIRCUIT FOR ELECTRONIC WRISTWATCH

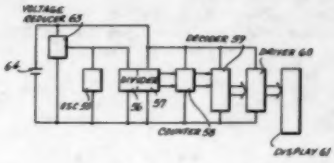
Matsuo Ichinose, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 852,873, Nov. 18, 1977, abandoned. This application May 1, 1980, Ser. No. 145,568

Claims priority, application Japan, Nov. 18, 1976, 51-138783

Int. Cl.³ G04B *1/00, 37/00*

U.S. Cl. 368—204 **14 Claims**



1. A power circuit for an electronic wristwatch having a voltage source;

circuit means having a plurality of circuit elements, said circuit means operating from said voltage source, a portion of said circuit elements operating with an input voltage lower than the voltage of said voltage source,

voltage reducing means connected intermediate said voltage source and said portion of said circuit elements operating at said reduced voltage, said voltage reducing means including:

a current source for storing and delivering power at reduced voltage to said portion of circuit elements,

reference voltage circuit means having a reference voltage output level, and including a differential amplifier for controlling the voltage level by sensing said reference voltage and limiting the voltage of said current source in proportion to said reference voltage, one input to said differential amplifier being connected to one end of said portion of circuit elements.

4,397,564

ELECTRONIC TIMEPIECE

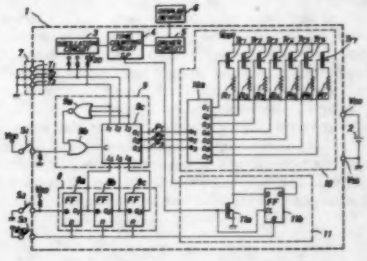
Hisashi Kawahara, Tokyo, Japan, assignor to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,522

Claims priority, application Japan, Apr. 1, 1980, 55-42111

Int. Cl.³ G04B *1/05*

U.S. Cl. 368—204 **8 Claims**



1. Electronic timepiece comprising:

a level setting circuit whose level is set by a level setting signal supplied from a plurality of outside selecting terminals,

a selecting circuit for supplying different level adjusting signals, and

a switching circuit for switching said level setting signal and

said level adjusting signals to selectively supply either of said signals to said level setting circuit, wherein a desired level is set by said level adjusting signals and then is fixedly set by selecting said outside selecting terminals.

4,397,565

ELECTRONIC TIMEPIECE INCLUDING AN ANIMATED DISPLAY

Tomio Ota, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 7, 1980, Ser. No. 204,973
Claims priority, application Japan, Nov. 9, 1979, 54-145180
Int. Cl.³ G04C *17/00, 19/00*
U.S. Cl. 368—242 **11 Claims**

1. An animated display electronic timepiece comprising:

a timepiece circuit including means for generating at least timekeeping signals representative of actual time and drive means for driving a timepiece display;

a liquid crystal timepiece display including display elements for displaying time in response to said timekeeping signals, said display being a liquid crystal display cell having two opposed and spaced apart transparent plates and transparent electrode means disposed thereon with a liquid crystal material in the space therebetween, selected regions of said liquid crystal material being rendered visually distinguishable from the remaining material upon application of a potential across said liquid crystal material, the display including transparent cover means disposed in registration with said display cell for viewing said display;

a time display region in said timepiece display for selectively displaying time in at least hours and minutes; and

an animated display region in said timepiece display including a pattern including at least one flickering display means and a permanent indicia disposed on said display cell being of less area and in optical registration with the flickering display means, the remainder of said pattern being permanent and disposed on said transparent means, the animation effect provided in response to flickering of said display means so that the permanent indicia on said display cell is viewable when the flickering display means is not rendered visually distinguishable from the remaining liquid crystal material, and said permanent indicia is not separately viewable from the flickering display element when the flickering display means is rendered visually distinguishable from the remaining liquid crystal material in response to signals from said timepiece circuit.

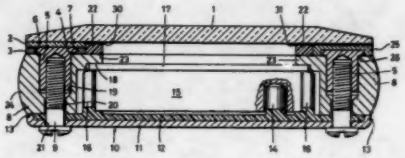
4,397,566

WRIST-WATCH CASING

Marc Lederrey, Le Landeron, Switzerland, assignor to Montres Rado S.A., Biel, Switzerland

Filed May 4, 1982, Ser. No. 374,689
Int. Cl.³ G04B *37/08, 19/24*
U.S. Cl. 368—291 **10 Claims**

1. A watchcase comprising a caseband having a substantially flat upper face and being adapted for receiving and surrounding a watch movement provided with an analogical time display means, a section of glass, having an opaque unit secured thereto, covering said upper face of the caseband, said unit including a flat frame secured to said glass, tapped sockets having a collar extending radially outwards at their base and being individually secured to said frame, screws screwed into



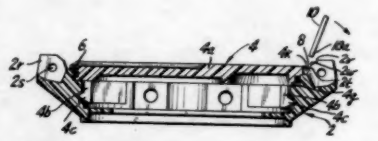
said sockets from the bottom side of the watchcase for removably securing said glass and said unit to said caseband, said glass and opaque unit being dimensioned such that the entire analogical time display means is visible when viewed along an axis perpendicular to said upper face of the caseband.

4,397,567

TIMEPIECE CONSTRUCTION WITH A CASEBACK REMOVABLE USING A CREDIT CARD

Stewart Carl, Cupertino, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Nov. 6, 1980, Ser. No. 204,432
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—309 **4 Claims**



1. A timepiece assembly comprising:

a. a plastic back cover member having a slanted lip along a straight side thereof and having attachment means projecting therefrom, and

b. a plastic case having an access opening in one side thereof over which the back cover member is positioned to close off said opening, said case including means for engaging the attachment means of the back cover member in snap-fit relation and further including a pair of lugs adjacent the lip of the back cover member for receiving conventional pin bars with each lug having a first slanted wall spaced from said lip to define an open-ended slot between said lugs and the lip to receive one end of a credit card and, each lug further having a second slanted wall intersecting said first slanted wall to define at their intersection a fulcrum on each lug adapted to contact the credit card intermediate its ends, whereby said credit card can be used as a lever to unsnap the back cover member from the case.

4,397,568

TIMEPIECE PUSH-BUTTON STRUCTURE

Masahiko Waki; Hisao Yamagata; Toshio Murata; Fumio Takeuchi, and Masataka Matsumoto, all of Tanashi, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

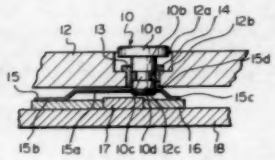
Filed Apr. 3, 1981, Ser. No. 250,974
Claims priority, application Japan, Apr. 8, 1980, 55-46477[U]
Int. Cl.³ G04C *17/00, 3/00;* **G04B** *19/30, 37/00*
U.S. Cl. 368—321 **3 Claims**

1. A push-button structure for a timepiece having a case and a circuit board, comprising:

a pressure conductive rubber which is rendered electrically conductive when applied with pressure;

a holder attached to an upper surface of said circuit board and holding said pressure conductive rubber in a fixed place;

a spring member attached to an upper surface of said holder and including a connection portion and a plurality of tongue portions interconnected by the connection portion, each of said tongue portions having a bridge-shaped central portion which is raised from said holder, and said spring member further including a substantially centrally located arcuated notch and a bifurcation extending therefrom; and



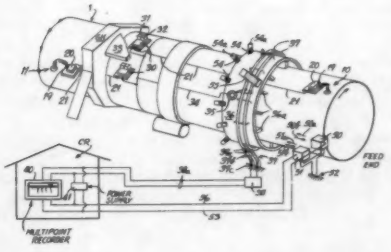
a push-button slidably disposed in said case and having its end engaging said notch, the end of said push-button being located directly above said pressure conductive rubber to press said rubber when said push-button is depressed.

4,397,569

SYSTEM FOR CORRELATING A SIGNAL SENSOR LOCATION WITH A RECORDER PRINTOUT

Richard H. Davis, Franklin, Tenn., assignor to The Direct Reduction Corporation, New York, N.Y.

Filed Apr. 1, 1981, Ser. No. 250,015
Int. Cl.³ G01K *13/08*
U.S. Cl. 374—154 **13 Claims**



1. A system for correlating the readout on a stationary recorder of a series of electrical signals, originating on a rotating cylindrical body and communicated in sequence to said recorder, with the relative locations of origin of each of said signals on said rotating body comprising:

a plurality of means spaced from each other on said body, for respectively producing said signals on said series;

continuous conductor means surroundingly mounted at a selected axial location on said body for receiving all of said signals in the series, and pickoff means off said body for conducting said signals from said conductor means off said body and to said recorder;

switching means, disposed on and rotating with said body, for controlling the sequential communication of said signals between their locations of origin and said conductor means in accordance with the rotational speed of said body;

indicating means, disposed on and rotating with said body, for indicating the relative locations of origin of each of said signals in the series;

photoelectric means, disposed adjacent said rotating body and responsive to the passage thereby of said indicating means rotating with said body, for producing keying signals indicative of each passage of said indicating means thereby; and

means for communicating said keying signals from said photoelectric means to said recorder;

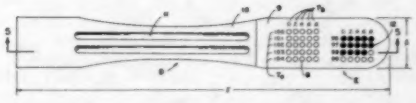
and wherein said indicating means comprises a series of indicators spaced circumferentially from each other on said body in accordance with the sequence spacing of said signals by said switching means and so disposed with respect to said photoelectric means that said keying signals are communicated to said recorder in sequence to actuate said recorder just prior to the receipt and readout of each of said signals in the series on said recorder so that each signal readout is correlated with its relative location of origin on said body; and means for resetting said recorder after the readout of each series of signals is completed.

4,397,570

PRESSURE SENSITIVE ADHESIVE CONTAINING A NUCLEATING AGENT FOR USE IN A DISPOSABLE THERMOMETER

Craig R. Hof, Hopatcong; Roy A. Ulin, Wyckoff, and Dennis Nickoloff, Lake Hiawatha, all of N.J., assignors to PyMaH Corporation, Somerville, N.J.

Filed Jun. 2, 1981, Ser. No. 269,912
Int. Cl.³ C09K *3/00*; G01K *11/16*
U.S. Cl. 374—162 **11 Claims**



1. A temperature-indicating device, comprising:

(a) heat-conducting carrier means having at least one spaced region defined therein to determine a like number of predetermined temperatures in a predetermined temperature range, said at least one spaced region containing a like number of different temperature-indicating mixtures therein, each mixture being a solid solution having a given nucleation efficiency and melting at or about one of said predetermined temperatures,

(b) a transparent cover layer means sealing said heat-conducting carrier means, said spaced regions, and said temperature-indicating mixtures, said transparent cover layer means and said heat-conducting carrier means capable of bonding to each other by adhesive means; and

(c) adhesive means (i) covering said heat-conducting carrier means, said spaced regions, and said temperature-indicating mixtures and (ii) bonding said heat-conducting carrier means to said transparent cover layer means, said adhesive means comprising:

(1) from about 0.5 to about 5.0 phr. of a nucleating agent selected from the group consisting of talc, howlite, titanite, Guyana bauxite, Arkansas bauxite, Spanish sepiolite, lepidolite, stilbite, petalite, calcium aluminate, and azurite substantially uniformly dispersed in

(2) a pressure-sensitive adhesive, said nucleating agent being (A) inert to both said pressure-sensitive adhesive and said temperature-indicating mixtures and (B) capable of raising the nucleation efficiency of said temperature-indicating mixtures.

4,397,571

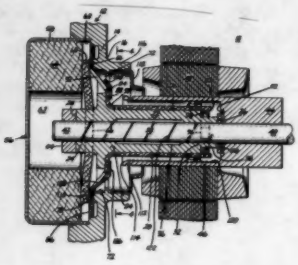
REVERSIBLE LUBRICATION SYSTEM FOR DYNAMOELECTRIC MACHINE

Wayne J. Morrill, 3448 S. Washington Rd., Fort Wayne, Ind. 46804

Continuation of Ser. No. 940,471, Sep. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 892,656, Apr. 3, 1978, abandoned. This application Oct. 6, 1980, Ser. No. 194,046

Int. Cl.³ F16C *17/02*

U.S. Cl. 384—397 4 Claims



1. In a unit bearing motor including a frame member having opposite sides and an elongated bearing post therein, said bearing post having first and second opposite ends with first and second bearing portions respectively extending axially inwardly from said ends, said bearing post having an elongated first portion extending from one side of said frame member to said first end, said bearing post portion being circular in cross-section, said bearing post having a second portion extending from the other side of said frame member to said second end, a shaft rotatably supported in said bearing portions and having a portion extending from said first end of said bearing post, a cup member secured to said other side of said frame member and enclosing said second portion of said bearing post to define a lubricant reservoir, said frame member having a plurality of openings formed therethrough outwardly from said bearing post and communicating with said reservoir, and lubricant absorbant material in said reservoir, a reversible lubrication system comprising: first wick means in said reservoir having a first portion arranged in lubricant-transfer relation with said absorbant material and a second portion arranged to wipe such shaft adjacent said second bearing portion, second wick means extending over said first bearing post portion and having a first portion extending through said frame openings and arranged in lubricant-transfer relation with said absorbant material and having a second portion arranged to wipe said shaft adjacent said first bearing portion, said second wick means including an elongated sleeve of wick material embracing said first bearing post portion and extending from said one side of said frame member to said first bearing post end, said sleeve having opposite ends, said first bearing post portion having at least one slot formed therethrough adjacent said first end and communicating with said shaft, said second portion of said second wick means including an annular wick member having a portion seated in said slot and wiping said shaft, said wick member having a peripheral surface engaging the inner surface of said sleeve adjacent one end thereof, said first portion of said second wick means comprising a plurality of finger elements respectively integral with and extending from the other end of said sleeve, said finger elements respectively extending through said openings, said finger elements respectively having distal ends arranged in lubricant-transfer relation with said first portion of said first wick means, said distal ends respectively engaging said other side of said frame member radially outwardly from said openings, said second portion of said bearing post having at least a second slot formed therethrough adjacent said second end and communicating with said shaft, said first wick means comprising a second annular wick member with said first portion thereof being seated in said second slot and wiping said shaft, said second portion of said second wick member extending radially outwardly beyond said frame openings, said second portion of said second wick member being adjacent the periphery thereof and being disposed between and respectively engaging said absorbant material and said distal ends of said finger elements, and a spring member for retaining said finger elements in operative position.

4,397,572

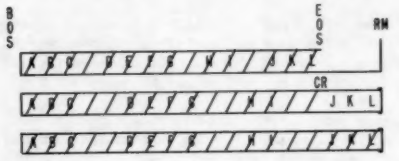
JUSTIFICATION OF OVERSTRUCK TEXT

Johnny G. Barnes; Rudolph E. Chukran; Patrick J. Hurley, all of Austin, and Harry L. Lineman, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 273,563

Int. Cl.³ B41J *19/64*

U.S. Cl. 400—3 11 Claims



1. In a system operable to provide right margin justification of lines of text stored in a text storage buffer the improvement comprising:

means for expanding interword spaces between words in said lines of text by dividing an unjustified end of line white space residue among existing interword spaces;

means for detecting a begin overstrike control code and an end overstrike control code in said lines of text; and

means for providing a plurality of overstrike characters to overlay the words and said expanded spaces between words bounded by one of said begin overstrike control codes and one of said end overstrike control codes, said means for providing a plurality of overstrike characters further including;

means for obtaining a first quotient by dividing an escapement width of said overstrike character into the white space residue distributed among interword spaces on a line between one of said begin overstrike control codes and one of said end overstrike control codes or an end of line control code; and

means for adding a number of overstrike characters to said line of text and overstrike characters, the number of said additional overstrike characters being related to said quotient.

4,397,573

DEVICE FOR EMBOSSING BRAILLE CODE CHARACTERS

Hans-Joachim Thiel, Pauerweg 4, 6104 Seeheim-Jugenheim 2, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 205,973

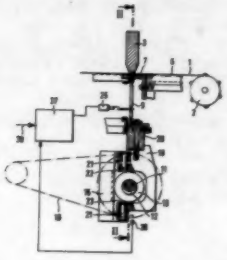
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1979, 2945622

Int. Cl.³ B41J *3/32*

U.S. Cl. 400—122 17 Claims

1. A device for embossing Braille code characters comprising an embossing matrix provided with recesses arranged according to Braille code dot lines, means for moving a web to be embossed past the recesses of said matrix, a set of stamping plungers arranged for a vertical reciprocating movement opposite said recesses in the matrix, means for guiding top ends of respective plungers into the recesses, a beam supported for a continuous reciprocating movement at the lower ends of said piungers, a plurality of actuating members coupled to respective plungers for selectively moving the same out of engage-

ment or into engagement with the continuously reciprocating beam, said reciprocating beam supporting an impact surface cooperating with the lower ends of said plungers, said actuation members being coupled to the lower portions of said plungers for swinging the same in a transverse direction relative to the direction of the vertical reciprocating movement,



whereby the lower ends of said plungers are selectively brought into and out of engagement with said impact surface, said beam being provided with guiding and retaining means for said plungers, and lower end portions of said plungers being formed with stepped members engageable with said guiding and retaining means during a return stroke of said beam.

4,397,574

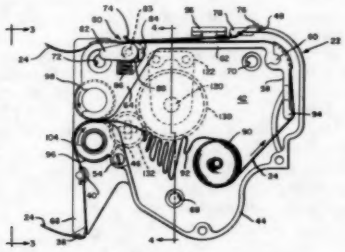
RELOADABLE RIBBON CASSETTE

Gary A. Wojdyla, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 88,883, Oct. 29, 1979, abandoned. This application Aug. 7, 1981, Ser. No. 291,137

Int. Cl.³ B41J *33/10*

U.S. Cl. 400—196.1 **14 Claims**



1. In a printer, a ribbon cassette having an

enclosure for receiving a coil of endless ribbon,

means for training an end loop portion of said ribbon in a path from an exit of said cassette and across the printer along a path spaced from and then past a printing station,

leaf spring means for tensioning said ribbon when training the end loop portion thereof from the cassette exit,

roller means operably connected with the printer for driving the ribbon through an entrance of and back into the cassette and forming the ribbon in random folds within the enclosure of said cassette after driving the ribbon through the entrance thereof while unwinding ribbon from the coil, and

cam means rotatably journaled and connected with said cassette for releasing said leaf spring means and for disengaging said roller means during loading of said ribbon cassette.

4,397,575

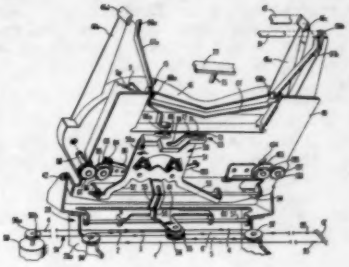
RIBBON LIFT AND FEED MECHANISM FOR A TYPEWRITER

Charles S. Aldrich, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,762

Int. Cl.³ B41J *32/00, 33/34, 33/04*

U.S. Cl. 400—208 **9 Claims**



1. A ribbon lift and feed mechanism for a typewriter/printer, comprising in combination:

a platen, a carrier mounting implements of printing thereon and moveable along a print line parallel to said platen;

a platform on said carrier for supporting at least a ribbon cartridge, said ribbon cartridge having a pair of spaced apart, deflectable projections for disposing ribbon along the said print line intermediate a print element and said platen;

a shuttle depending from said platform and mounted for translation relative thereto;

drive means mounted remotely from said carrier and connected to said shuttle to effect translation of said shuttle relative to said platform;

a cam on said shuttle and a cam follower mounted on said platform in coactive engagement with said cam, said cam follower including means engageable with said deflectable projections on said cartridge for effecting placement of different portions of said ribbon intermediate said print element and said platen depending upon the displacement of said shuttle by said drive means.

4,397,576

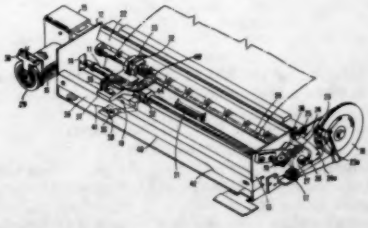
PRINT HEAD ACTUATOR

John E. Drejza, Charlotte, N.C.; Donald F. Manning, and Joseph T. Wilson, III, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,799

Int. Cl.³ B41J *25/30*

U.S. Cl. 400—320 **8 Claims**



1. In a printer having a print station for supporting a medium

on which a line of indicia is to be recorded, recording apparatus comprising:

support means spaced from and parallel to said line of indicia;

carrier means translatable along and rotatable about said support means and including cam follower means and recording means resiliently biased toward said medium; and

cam means extending along said support means and having at least one cam surface continuously engaging said follower means for moving said recording means at each end of said line between a retracted position out of contact with said medium and an operating position resiliently engaging said medium during translation of said carrier means.

4,397,577

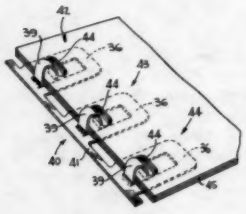
SNAP-ACTION ONE-PIECE CLAMPING DEVICE

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767

Filed Jan. 23, 1981, Ser. No. 227,718

Int. Cl.³ B42F *3/00*

U.S. Cl. 402—19 **9 Claims**



1. A positionally bi-stable clamping device formed from a single member comprising a thin endless member having outer and inner rims, said outer rim defining a reference plane, said inner rim enclosing a prescribed open area, said rims each having a length dimension and a width dimension wherein said length dimension is greater than said width dimension, said endless member having a first stable position wherein it subtends a first angle with said reference plane on a first side of said reference plane and a second stable position wherein it subtends a second angle with said reference plane on a second side of said reference plane, said single member further comprising a tongue in the form of an elongated member projecting in said length dimension inward of said endless member from said inner rim in a first orientation with respect to said reference plane when said endless member is in said first position and in a second orientation with respect to said reference plane when said endless member is in said second position, whereby an object inserted between said tongue and said outer member in said first stable position can be clamped between said tongue and said outer member in said second stable position; said tongue including a root portion where it projects from said inner rim, and a distal end remote from said root portion, said tongue being bent away from said reference plane proximate said root portion and further bent toward said reference plane between said root portion and said distal end.

4,397,578

UNDERSEA PLATFORM CONSTRUCTION SYSTEM

Calvin R. Inman, 20 W. Mosoholu Pkwy., South Bronx, N.Y. 10468

Filed Feb. 18, 1981, Ser. No. 235,501

Int. Cl.³ E02B *3/06*

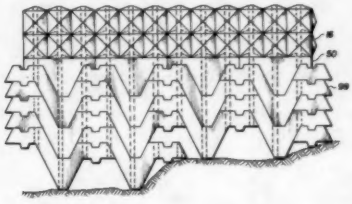
U.S. Cl. 405—33 **5 Claims**

1. An integral V-Block suitable as a component for a stabile construction comprising:

(a) an elongated lower anchor member having a forward and rearward portion along the length thereof; said forward portion having a first protuberance on the upper part thereof and a first recess on the lower part thereof, which first recess is situated below the first protuberance; and, said rear portion having a second protuberance on the upper part thereof and a second recess on the lower part thereof, which second recess is situated below the second protuberance;

(b) two legs of unequal length contiguous with and extending upwardly and outwardly from said elongated lower anchor member, describing a V-shaped volume with said anchor; one of said legs being a short leg and another of said legs being a long leg, said long leg terminating further from said elongated lower anchor member than the short leg;

(c) a first upper arm contiguous with and extending outwardly from the terminus of the long leg, said first upper arm having a second forward portion with a third upper surface and a third lower surface and a second rearward portion with a fourth upper surface and fourth lower surface;



(d) a second upper arm contiguous with and extending outwardly from the terminus of the short leg; said second upper arm having a third forward portion with a fifth upper surface and a fifth lower surface and a third rearward portion with a sixth upper surface and a sixth lower surface;

(e) a third recess in the third upper surface and a third protuberance on the third lower surface, which third protuberance is situated below the third recess;

(f) a fourth recess in the fourth upper surface and a fourth protuberance on the fourth lower surface, which fourth protuberance is situated below the fourth recess;

(g) a fifth recess in the fifth upper surface and a fifth protuberance on the fifth lower surface, which fifth protuberance is situated below the fifth recess;

(h) a sixth recess in the sixth upper surface and a sixth protuberance on the sixth lower surface, which sixth protuberance is situated below the sixth recess.

4,397,579

EXPANSION JOINT STRUCTURES

Gerald L. Goldman; Joseph W. Gallagher, and William A. Merlack, all of Pittsburgh, Pa., assignors to Columbia Chase Corporation, Braintree, Mass.

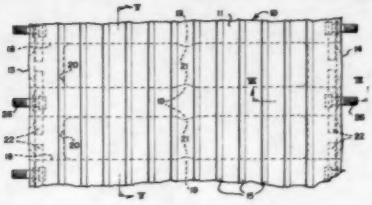
Filed Jun. 8, 1981, Ser. No. 271,259

Int. Cl.³ E01C *11/02*

U.S. Cl. 404—60 **20 Claims**

1. An expansion joint and seal structure for the variable width space between a pair of roadway, bridge or like sections which are subject to expansion and contraction with temperature changes comprising an elongate elastomeric member with generally parallel side marginal edges and generally parallel top and bottom surfaces, a plurality of spaced apart transversely extending generally rectangular passages extending through the elastomer member from one marginal edge to the other marginal edge, intermediate the top and bottom surfaces, each said openings having an indexing means on at least one side, a series of metal load bearing members equal in number to the number of passages and having the general shape of the

transversely extending passages and slidable therein, said metal load bearing members having a cooperating indexing means engaging the indexing means in the passage to center the load bearing members in said passage, said load bearing members being shorter than the length of the passage and maintained in the passage substantially equidistant from the marginal edges



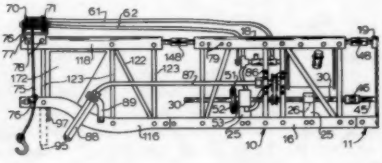
by said indexing means but having a length sufficient to span the space between the roadway or bridge sections at all times, means included in the marginal side edges of said elastomer member for fastening the elastomer member to said spaced bridge or roadway sections and a plurality of longitudinally spaced slots on at least one of the marginal side edges and the top and bottom surfaces of the elastomer member.

4,397,580

VIBRATING SCREED AND CURB/GUTTER FORMING APPARATUS AND METHOD

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Filed Nov. 23, 1981, Ser. No. 323,728
Int. Cl.³ E01C *19/22, 3/06*
U.S. Cl. 404—72 **6 Claims**



6. The method of forming curbs with a vibrating screed and hopper fed curb-forming apparatus comprising:

(a) pouring the wet concrete mix to be formed into a curb in front of the hopper fed curb-forming apparatus;

(b) while pouring additional wet concrete mix through the hopper and vibrating the concrete mix forward of the hopper moving the apparatus forward in the direction of screeding to form the curb; and

(c) while the apparatus moves forward smoothing the formed curb with a trailing curb-conforming skirt adapted to dampen any vibrations imparted to the skirt from the apparatus.

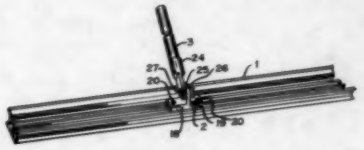
4,397,581

GROOVER, TROWEL AND BULL FLOAT COMBINATION

Jack D. Jarvis, Memphis, Tenn., assignor to Aluma form Inc., Memphis, Tenn.

Filed Aug. 4, 1980, Ser. No. 174,569
Claims priority, application Japan, Aug. 10, 1979, 54-109457[U]
Int. Cl.³ E01C *19/22*
U.S. Cl. 404—97 **12 Claims**

1. A bull float for use in finishing concrete or the like, comprising, a plate portion having a handle removably attached thereto, said plate portion having at least a front edge, said plate portion having a substantially upstanding front wall integral of its front edge, said front wall being contoured to function as means for moving accumulations of concrete for attachment of other working instrumentalities to the float, said substantially upstanding front wall formed in a concavely-like manner to facilitate the moving of accumulations of concrete and for providing attachment of other working instrumentalities ot the said bull float, attachment means for the handle formed along the upper side of the plate portion and extending for some length longitudinally thereof to allow for adjustment for the positioning of the handle upon the said plate portion, said attachment means including a pair of upstanding members, each member having an inward shoulder projecting towards



each other and thereby forming a clearance slot between the said members, at least one fastener having an enlarged head being accommodated within said slot, a bracket connecting at the lower end of the handle and securing with the said fastener for holding the handle and the plate portion of the bull float together in their adjusted positioning, said bracket including at least one angle member, one flange of the angle member having an aperture therethrough for accommodating the said fastener, the other angle flange having a series of ribs formed thereon, the lower end of the handle forming a boss, said boss having a series of formed ribs thereon, the ribs of the angle capable of intermeshing with the boss ribs for interlocking the bracket and its accompanying handle into a fixed position, and a fastener holding said boss and bracket into their locked positioning.

4,397,582

METHOD OF CREATING A COLD WATER CONDUIT TO BE USED IN OCEAN THERMAL ENERGY CONVERSION SYSTEMS

William L. Green, New Orleans; Dennis E. Calkins, Metairie; Edward A. Landers, Jr., Covington, and Daniel W. Gray, New Orleans, all of La., assignors to McDermott Incorporated, New Orleans, La.

Filed Mar. 31, 1981, Ser. No. 249,580
Int. Cl.³ E21D *9/08, 10/00;* **E21B** *7/04*
U.S. Cl. 405—137 **3 Claims**

1. A method of creating a conduit to be used in association with ocean thermal energy conversion systems and the like, said method comprising the steps of drilling at least one passageway through an underwater land formation, wherein the passageway is directionally drilled so that the top of the passageway is located on an underwater land shelf and the bottom of the passageway is located on an underwater land slope, and

repeatedly introducing and then detonating at least one explosive charge in the passageway at progressively higher elevations.

4,397,583

TUNNEL LININGS

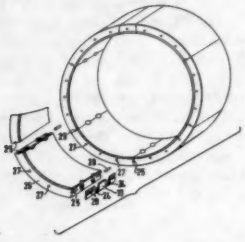
Thomas E. Horncy, Kirby Muxloe; David R. Allum, Mansfield, and Rupert J. S. McBean, Market Harborough, all of England, assignors to Charcon Tunnels Limited, Nottinghamshire, England

Continuation-in-part of Ser. No. 165,394, Jul. 2, 1980, abandoned, which is a continuation of Ser. No. 932,216, Aug. 9, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 210,792

Claims priority, application United Kingdom, Aug. 16, 1977, 34416/77

Int. Cl.³ E21D *11/08;* E04C *1/00*

U.S. Cl. 405—150 4 Claims



1. A tunnel lining comprising a plurality of arcuate tunnel lining segments formed in a cast material of high-compressive strength, each segment having joining means at each longitudinal end thereof for joining the segment ends to the corresponding ends of similar segments to form a ring, the joining means comprising a semi-cylindrical groove formed in the segment end and part circular tensile hoops projecting from the segment end to bridge the groove and overlap with corresponding hoops on the adjacent segment end and fastening means for engaging in the overlapping hoops between the segment ends to mate together and to hold the segment ends together; the improvement comprising at each end of each segment at least two semi-cylindrical grooves at spaced locations along the end and extending across the segment end from the inner side of the segment and stopping short of the outside of the segment; for at least one of the grooves a pair of part circular tensile hoops projecting from the segment end and bridging the groove to receive a single hoop on the adjacent segment end between said pair of hoops; and adjustable permanent elongate fastening devices which have a tapered length longer than the spacing between said two hoops to be driven into the overlapping hoops between the segment ends to draw the segment ends together and to apply a compressive force and control rotation between the segment ends which compressive force and degree of rotation can be varied in accordance with the extent to which the fastening devices are driven into the hoops to provide a sealed permanent connection, with controlled rotation, between the segment ends which can transmit shear tension, compression and bending moment through the ring of segments and thereby forming a monolithic structure capable of supporting both internal and external pressures.

4,397,584

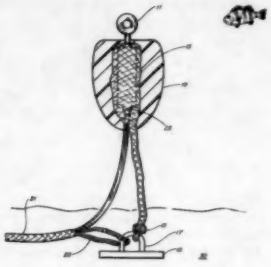
TRAWL RESISTANT SENSOR MOUNT

Alexander L. Sutherland, Carriere, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1981, Ser. No. 294,667

Int. Cl.³ F16L *1/00;* B63B *21/52*

U.S. Cl. 405—172 5 Claims



1. A sensor mount for an oceanographic sensor at the bottom of a body of water comprising:

means for anchoring said sensor to said bottom;

a net around said sensor, said net holding and integrally connecting said sensor to said anchoring means;

an electromechanical cable electrically connected to said sensor and mechanically connected to said anchoring means to hold said sensor a short distance above said bottom, said electromechanical cable being buried in said bottom; and

a float of a buoyant material encasing said net and sensor to return said sensor to an upright position when upset, said flat having a streamline shape with no edges to prevent entanglement of said sensor in a trawl net.

4,397,585

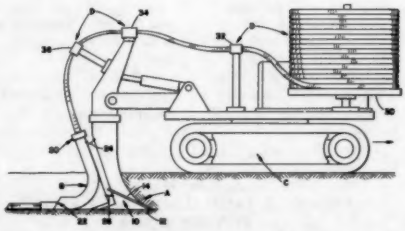
APPARATUS FOR INSERTING FOLDABLE CONDUIT BELOW GROUND

James L. Fouss, Findlay, Ohio; Michael L. Cook, Sandusky, Mich., and Worthy O. Hassan, Findlay, Ohio, assignors to Hancor, Inc., Findlay, Ohio

Filed Jan. 22, 1981, Ser. No. 227,237

Int. Cl.³ E02F *5/10*

U.S. Cl. 405—183 29 Claims



1. An apparatus for inserting below the surface of the soil foldable conduit which is foldable between a generally flattened configuration in which two conduit wall portions are disposed generally side-by-side and adjacent and a hollow configuration in which the two conduit wall portions are at least partially displaced to defined a hollow passage therebetween, the appartaus comprising:

a feeder having an inlet end adapted to be disposed above the

soil surface and an outlet end adapted to be disposed below the soil surface, the inlet end defining an inner cross section which is shaped similar to the exterior cross section of the foldable conduit in its flattened configuration, unfolding means for at least partially separating the two conduit wall portions to urge the conduit toward the hollow configuration, the outlet end defining an interior cross section which is shaped similar to the exterior cross section of the foldable conduit in its hollow configuration, whereby the conduit is folded as it is fed from the inlet end through the feeder to the outlet end and is discharged from the outlet end in its hollow configuration.

4,397,586

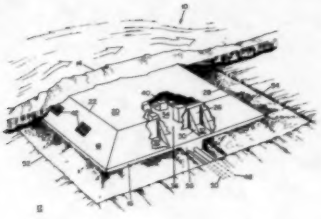
OFFSHORE ARCTIC STRUCTURE

Richard T. Weiss, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Continuation of Ser. No. 55,214, Jul. 6, 1979, abandoned. This application Nov. 9, 1981, Ser. No. 322,628

Int. Cl.³ E02B 17/00

U.S. Cl. 405—217 25 Claims



1. An offshore structure adapted for use in a body of water having ice sheets floating on its surface, said structure comprising:

a base capable of being fixedly attached to the floor of said body of water; and

a generally frustum shaped upper section having sides which slope upwardly and inwardly and a substantially horizontal top portion attached to said base, said horizontal top portion having a generally smooth and unobstructed top surface capable of supporting said ice sheets, said structure being sized so that said substantially horizontal top portion is located at or near the surface of said body of water such that encroaching ice sheets will be deflected upwardly by said sloped walls onto said smooth and unobstructed top surface and permitted to flex and ride over said structure and return to the surface of said body of water substantially intact.

4,397,587

METHOD OF CONSTRUCTING AN ARTIFICIAL ISLAND AND ISLAND CONSTRUCTED BY THE SAME

Jan Op den Velde, Bussum; Jan B. Elzerman, Amsterdam, and Klaas Oterdoom, Bentveld, all of Netherlands, assignors to Ballast-Nedam Groep N.V. and Amsterdamse Ballast Bagger en Grond (Amsterdam Ballast Dredging) B.V., both of Amstelveen, Netherlands

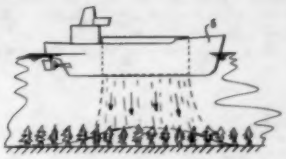
Filed Oct. 6, 1980, Ser. No. 194,225

Claims priority, application Canada, Aug. 5, 1980, 357598

Int. Cl.³ E02D 21/00

U.S. Cl. 405—222 5 Claims

1. A method of constructing an artificial island by depositing material such as sand, clay or the like on the buildiing site on an under water bottom and by providing inhibiting means formed by branched elements positioned on the building site for reducing the rate of effluence of the material such as sand, clay or the like along the under water bottom, wherein before lowering the branched elements, at least some of said branched elements are weighted with a load adjacent their bottom ends, characterized in that in a step (a) the loaded branched elements are dumped in a standing position from a floating barge onto



the under water bottom and that in a subsequent step (b) the material is dumped over said branched elements.

4,397,588

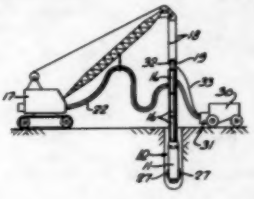
METHOD OF CONSTRUCTING A COMPACTED GRANULAR OR STONE COLUMN IN SOIL MASSES AND APPARATUS THEREFOR

R. Robert Goughnour, Allison Park, Pa., assignor to Vibroflotation Foundation Company, Pittsburgh, Pa.

Filed Jan. 23, 1981, Ser. No. 227,545

Int. Cl.³ E02D 7/00

U.S. Cl. 405—236 14 Claims



1. A method of constructing a compacted granular or stone column in soil to increase load-bearing capacities comprising the steps of penetrating a probe downwardly into soil to be compacted to a predetermined depth thereby forming an elongated cavity in the soil, withdrawing the probe from the soil cavity, backfilling at least a portion of the cavity with granular material and compacting the granular material in the cavity to form a compacted column, penetrating a probe downwardly into the compacted column to a predetermined depth thereby forming an elongated cavity in the compacted column, withdrawing the probe from the cavity formed in the compacted column, and filling the cavity formed in the compacted column with a cementitious grout to form a solid core after hardening of the grout.

4,397,589

GROUND ANCHORAGE MEANS UTILIZING A REINFORCEMENT OR TIE INSULATED FROM THE GROUND

Michel Darroussin, Maisons Laffitte, and Daniel Marchand, Paris, both of France, assignors to Soletanche, Nanterre, France

Continuation of Ser. No. 923,989, Jul. 12, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,588

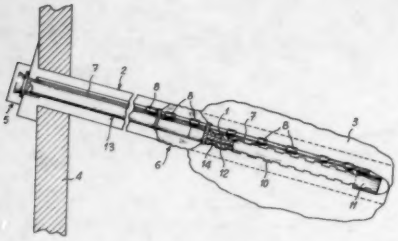
Claims priority, application France, Jul. 13, 1977, 77 21650

Int. Cl.³ E02D 5/76

U.S. Cl. 405—260 4 Claims

1. A ground anchoring device having a root portion adapted to be sealed in the ground, said root portion being comprised of a crenellated envelope with at least one tie rod therein adapted to be encased by a hardenable material, the crenellations of said envelope forming a helical thread to enhance the filling of said envelope with hardenable material and ensure a good transmis-

sion of force through said envelope, a free portion joined to said root portion and being comprised of a fluid tight sheath fluid tightly joined to said crenellated envelope and filled with a non-corrosive product, a material injection tube extending outside of and along said sheath and said crenellated envelope substantially over the whole lengths thereof and provided with spaced material injecting outlets for the injection of hardenable



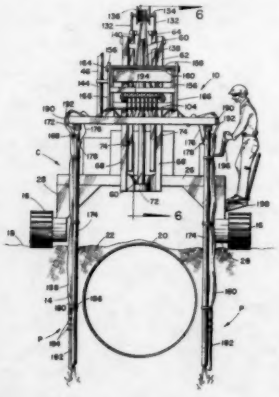
material therefrom, a distensible bag in an intermediate zone of said ground anchoring device and fluid-tightly secured at one end thereof to said injection tube and to said sheath and at the other end thereof to said injection tube and to said crenellated envelope, said bag being filled with hardenable material injected therein from said tube, and ground-sealing means for sealing said ground anchoring device at ground level with an anti-corrosion material.

4,397,590

METHOD AND APPARATUS FOR COMPACTING BACKFILL IN TRENCHES

Orlando H. Friesen, 7243 West Titan Rd., Littleton, Colo. 80125, and John J. Fink, 8950 Clay St., Denver, Colo. 80221

Filed May 1, 1981, Ser. No. 259,476
Int. Cl.³ E02D *3/02*
U.S. Cl. 405—271 **6 Claims**



1. The trench backfill compaction apparatus which comprises:

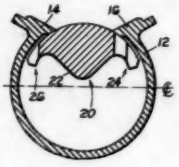
a self-propelled carriage having transversely-spaced means for advancing same along a trench in straddling relation to a pipe laid therein; an upright mast mounted on the forward end of the carriage; a forwardly-extending boom mounted on the mast for relative movement up and down the latter in overhanging relation to the trench; means connected between a fixed support movable with said carriage and said boom operative upon actuation to raise and lower the latter; a transversely-extending tool-carrying platform suspended from said boom; at least one pair of combination puddling and vibrating subassemblies suspended beneath said tool-carrying platform positioned to enter the trench on opposite sides of a pipe laid therein, said subassemblies each including an elongate rigid nozzle for introducing water beneath the surface of loose soil backfilling the trench and a vibrator connected to said nozzle for coordinated movement therewith; means for introducing water into said nozzles connectable to a remote pressurized source thereof; and, means comprising a self-contained source of power for said vibrators on board the carriage.

4,397,591

PNEUMATIC OUTLET CONTROL VALVE

John L. Carney, Jr., Lake St. Louis, and Gary L. Vierck, St. Peters, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,344
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—131 **15 Claims**



1. A pneumatic outlet comprising: a discharge tube attached to sloping outlet walls having lips at their lower inner edges; a rotatable control valve located within said tube; said control valve comprising arcuate segment of less than 180°; at least the leading edge portion of the control valve having a contour of openings for metering flow of particulate lading into the discharge tube which tends to prevent particulate lading becoming trapped between the control valve and the discharge tube; said contour including a plurality of laterally spaced projections defined by converging, formed surfaces extending outwardly from a control valve body portion; said adjacent formed surfaces defining metering slots or recesses between said control valve projections; said converging surfaces being tapered with respect to the vertical in a direction such that the converging surfaces direct lading away from the control valve.

4,397,592

INSERT HOLDER AND METHOD OF HOLDING

Robert A. Erickson, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

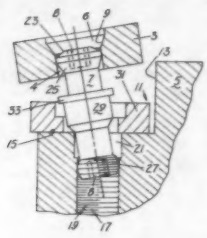
Filed Nov. 10, 1980, Ser. No. 205,440
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—105 **18 Claims**

1. A toolholder for use in holding a cutting insert having a tapered aperture wherein a wall of said aperture forms a locking face, and wherein said toolholder comprises: a toolholder body and a cooperating locking pin means;

said toolholder body comprising an insert receiving pocket having a planar bottom wall and a side wall substantially normal to said bottom wall; and a pin receiving hole formed through, and substantially normal to, said bottom wall, said pin receiving hole having a threaded section and a cylindrical smooth bore section;

said locking pin means comprising a diametrical elongate body; a clamping head having a locking shoulder; a reduced pitch diameter threaded portion; and a cylindrical increased diameter section located between said threaded portion and said locking shoulder;

said locking pin means rotatably mounted in said pin receiving hole with said clamping head extending into said insert receiving pocket, with said cylindrical increased diameter section snugly and slidingly engaging said smooth bore section and with the respective threaded portion and section of said locking pin means and said pin receiving hole threadedly engaged so that said rotation of said locking pin means advances or retracts said locking pin means in said pin receiving hole; said locking pin means, when rotated to a first position and while at least partially threadedly engaged in said pin receiving hole, is freely



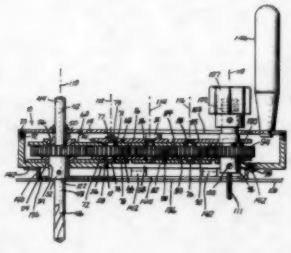
tiltable so as to allow said clamping head to be inserted into said insert aperture; said locking pin means, when rotated to a second position, is held substantially laterally fixed by the snug and sliding engagement of said increased diameter section with said smooth bore section, and wherein said locking pin means when in said second position loosely holds said insert captive in the toolholder pocket; and said locking pin means when rotated from said second to a third position, causes said locking shoulder of said clamping head to abut said locking face of said insert aperture and clamp said insert against said bottom and side wall of said insert receiving pocket.

4,397,593

TOOL FOR CUTTING OPENINGS

William A. Fordeck, 1025 Ridgewood Dr. #14, Fort Wayne, Ind. 46805

Filed Feb. 2, 1981, Ser. No. 230,377
Int. Cl.³ B23C *1/20*
U.S. Cl. 409—179 **11 Claims**



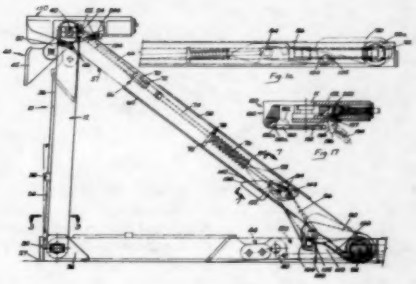
1. A tool for cutting openings in a workpiece comprising: a housing; an articulated arm received in said housing, said arm having a proximal and distal end and a plurality of sections pivotable about spaced parallel axes, such that the distal one of said axes is movable between positions close to and distal from the proximal one of said axes; a plurality of gears journalled in said sections, each said gear being journalled for rotation about a predetermined one of said axes; and said gears being operatively meshed in series to form an articulated gear train; a pilot drill fixedly connected to the proximal one of said gears for rotation about the respective axis, said drill having a shank portion extending outwardly from said housing and being operatively engageable by a machine tool, said housing being manually rotatable about said drill; tool holding means fixedly connected to the distal one of said gears for rotation therewith about the distal one of said axes, whereby said pilot drill is drivingly coupled to said tool holding means; and clamping means for fixedly securing said distal section to said housing with said distal axis disposed at a selected spacing from said proximal axis.

4,397,594

COLLAPSIBLE TRAILER HITCH BUMPER BLOCK ASSEMBLY

James C. Hammonds, St. Charles, Mo.; Patricia S. Stoller, Plymouth, Mich., and Ronald D. VanDyke, Florissant, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 8,300, Jan. 31, 1979, Pat. No. 4,239,429. This application Jun. 2, 1980, Ser. No. 155,708
Int. Cl.³ B60P *3/06*; B61D *3/16*; B61K *13/00*; B62D *53/10*
U.S. Cl. 410—59 **7 Claims**



1. A tractor operated hitch comprising: a vertical strut and a diagonal strut, each connected to a hitch head and which provide the sole support for the hitch head; a bumper block assembly pivotably mounted about the hitch head; said bumper block assembly including a bumper block depending from and extending outwardly from said hitch head in a direction away from said diagonal strut a distance sufficient to be engaged by a tractor used to load and unload trailers; said bumper block assembly connected on the opposite side of its pivot point to a diagonal strut linkage, where upon application of sufficient force by the tractor to said bumper block; said bumper block assembly will pivot about its pivot point and disconnect said diagonal strut linkage from an engaged position to a disengaged position with at least one fixed lug located adjacent said diagonal strut, whereby the hitch falls, at least partially by gravity, to retracted position on a deck; said vertical strut having a bumper block assembly slot located below said hitch head; said bumper block assembly located within said slot in retracted position; whereby in retracted position said bumper block assembly is positioned between the deck and the standard height above the deck.

4. A tractor operated hitch comprising: a vertical strut means connected to pivot pin means located in a hitch head; a diagonal strut connected to said pivot pin means; said vertical strut and said diagonal strut providing the sole support for the hitch head where vertical strut loads due to fore and aft movement of a trailer extend downwardly through said vertical strut substantially along the axis of said vertical strut to substantially eliminate bending loads in said vertical strut; a bumper block assembly pivotally mounted about the hitch head; said bumper block assembly depending from and extending outwardly from said hitch head in direction away from said diagonal strut a distance sufficient to be engaged by a tractor used to load and unload trailers; said bumper block assembly connected on the opposite side of its pivot point to a diagonal

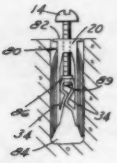
strut linkage, whereby upon application of sufficient force by the tractor to said bumper, said bumper block assembly will pivot about its pivot point and disconnect said diagonal strut linkage from an engaged position with at least one fixed lug located adjacent said diagonal strut to a disengaged position, whereby the hitch falls at least partially by gravity to a retracted position on a deck.

4,397,595

ANCHORING RETAINER FOR THREADED FASTENERS

Jon D. Smith, Fenton, and Glenn T. Parker, Ortonville, both of Mich., assignors to Dry Dock Industries, Inc., Fenton, Mich.

Division of Ser. No. 929,689, Jul. 31, 1978, abandoned, which is a continuation-in-part of Ser. No. 803,806, Jun. 6, 1977, Pat. No. 4,143,581. This application May 15, 1980, Ser. No. 150,013
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.³ F16B *35/04*
U.S. Cl. 411—15 7 Claims



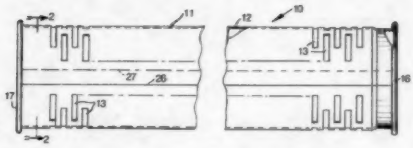
1. A fastener assembly comprising in combination a retainer for mounting in a blind hole of a supporting structure and a threaded element which extends into and is threadedly carried by said retainer for holding said retainer in the blind hole and for attaching secondary items, said retainer being foldable prior to insertion into the blind hole and comprising a flexible unitary one-piece body made from a plastic material, said body being symmetrical and having an axis which is adapted to extend through the hole in the supporting structure when the retainer is folded and inserted therein, said body having a top, a bottom and a pair of sides, said body between said sides being of substantially uniform width between said top and said bottom, said body prior to its insertion into said hole being of generally triangular configuration when viewed from either one of the sides thereof, said body having a sleeve provided with a sleeve opening surrounding the axis, said sleeve being of rectangular cross section and having a first pair of parallel edge surfaces forming part of the parallel sides of said body, and a second pair of parallel edge surfaces perpendicular to said first pair of parallel edge surfaces and located on opposite sides of said axis, said second pair of edge surfaces being provided with a pair of integrally formed elongated flexible legs, each of said legs having a width generally equal to the distance between the other pair of opposing edges of said sleeve, said legs having said surfaces forming part of the parallel sides of said body, an elongated flexible strut having side surfaces forming part of the parallel sides of said body, said strut being spaced axially from said sleeve and located entirely between said legs, said strut prior to folding being of V-shape and including a central strut portion spaced from the sleeve and a pair of flexible connecting strut portions, each of said connecting strut portions being integrally connected to the central strut portion and to one of the flexible legs near the end thereof, the legs and strut portions of said retainer being moved together to permit said retainer to be inserted into the blind hole, with said sleeve end of the retainer being generally flush with the outer end of the blind hole, said threaded element being threadedly connected to said sleeve and cooperable with said strut whereby rotation of said threaded element into the blind hole initially forces opposite surfaces of said connecting strut portions together into abutting engagement, with continued rotation of said threaded element into the blind hole moving said strut towards the bottom of the hole and moving opposite surfaces on each strut portion together into abutting engagement and urging the legs of said retainer away from said axis into frictional contact with the wall of the blind hole throughout substantially the entire height of said legs.

4,397,596

METHOD OF MAKING CONTAINER FOR GAS GENERATING PROPELLANT

Robert A. Strasser, Livonia, and Stephen W. Goch, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 220,347, Dec. 29, 1980. This application Sep. 28, 1982, Ser. No. 425,827
Int. Cl.³ B21D *51/26*
U.S. Cl. 413—6 5 Claims



1. The method of forming a propellant container, comprising:

perforating a thin rectangular sheet metal blank throughout its length and width except for marginal portions at the sides and ends;

positioning a hermetic liner over the perforated area of the sheet metal blank with the marginal portions of the latter being left substantially uncovered;

sealing the hermetic liner to the underlying surface of the sheet metal blank;

rolling the sheet metal blank into a tubular shape with the hermetic liner on the inner side of the tube;

the sheet metal blank being rolled to bring its marginal side edge portions into contiguous relationship without overlapping the side edges of the hermetic liner;

permanently joining the contiguous edges of the rolled sheet metal blank to form an integral elongated tube;

and closing the open ends of the tube with end caps rolled and crimped to form a double seam.

4,397,597

METHOD FOR THREADING CLOSURES

Roderick V. King, Girard, Pa., assignor to Ethyl Products Company, Richmond, Va.

Filed Oct. 27, 1980, Ser. No. 200,909
Int. Cl.³ B21D *39/03*
U.S. Cl. 413—23 9 Claims

1. A method of forming a spiral thread in the inturned curled edge provided at the lower end of the sidewall of a closure comprising:

a. vertically lowering the closure until its shoulder makes contact with a shoulder provided on a cap nest carried by a fixed support member;

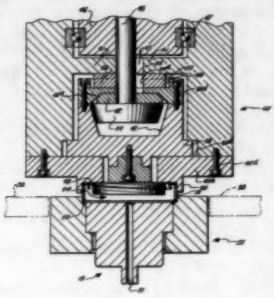
b. vertically lowering a threading tool having at least one spiral thread on its exterior into the interior of the closure;

c. supporting the upper portion of the sidewall of the closure with a fixed support member separate from the cap nest;

d. transversely moving the threading tool so that the spiral thread contacts the inturned curled edge on the closure;

e. moving the threading tool around the curled edge of the

closure in an orbital path while restraining the threading tool against both rotational and longitudinal movement to



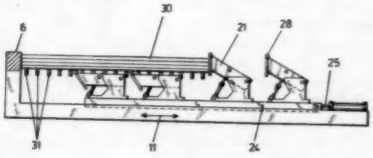
form at least one spiral thread in the curled edge of the closure.

4,397,598

APPARATUS FOR ALIGNMENT OF LARGE PLANAR MEMBERS AT FEED TABLES OF MACHINE TOOLS

Wilfried Ess, Schwarzach, and Horst Kollmann, Dornbirn, both of Austria, assignors to Firma Schelling & Co., Schwarzach, Austria

Filed Mar. 20, 1981, Ser. No. 245,708
Claims priority, application Austria, Mar. 21, 1980, 1555/80
Int. Cl.³ B65H *31/34*
U.S. Cl. 414—28 **15 Claims**



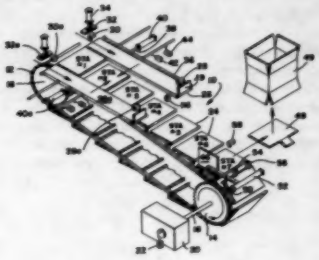
1. Apparatus for aligning planar workpieces on a feed table relative to a reference position comprising: means defining said reference position; base means; a plurality of arms each located a different distance from said reference position and each having a first and a second end; means pivotally mounting said first end of each of said arms to said base means; engagement means at said second end of each of said arms adapted to engage the edge of a workpiece to urge said workpiece against said means defining said reference position to effect a desired positioning thereof; biasing means applying a force urging said arms to a raised pivotal position at which said engagement means are located to engage an edge of said workpiece, said force of said biasing means being of a magnitude to enable each of said arms to be individually pivoted to a lowered pivotal position beneath a workpiece by the weight of at least one of said workpieces overlying said second end of said arm; and means for moving said arms laterally toward and away from said reference position to effect engagement of said engagement means against the edge of a workpiece depending upon the lateral dimension of said workpiece and upon the position of the arm upon which said engagement means is mounted relative to said reference position.

4,397,599

DESCENDING ACCUMULATOR FOR AUTOMATIC CASE PACKER

Herbert J. Sabel, 543 Avenue Del Oro, Sonoma, Calif. 95476

Filed Dec. 16, 1981, Ser. No. 331,252
Int. Cl.³ B65G *57/10*
U.S. Cl. 414—46 **10 Claims**



1. An apparatus for accumulating and stacking a plurality of articles into a number of tiers for subsequent loading into a shipping container, said apparatus comprising:

chain means extending around drive sprocket means at one end and idler sprocket means at its other end, said idler sprocket means being at a higher elevation than said drive sprocket means so that said chain means is inclined at a predetermined angle;

rotary power means for turning said drive sprocket means to move said chain means in one direction;

a plurality of tray means, each having a flat surface for supporting said articles;

means for connecting said tray means in consecutive order along said chain means, so that their flat surfaces are maintained horizontally and are stepped downwardly from said idler sprocket means to said drive sprocket means on the upper side of said chain means;

an inlet feed means adjacent to at least one side of said chain means for receiving a line of articles to be stacked;

means for accumulating a predetermined number of articles in an adjacent side by side order on said inlet feed means;

pushing means for moving the accumulated articles on said inlet feed means onto a plurality of adjacent tray means including an uppermost tray that is empty and at least one adjacent tray in line that is partially loaded so that a substantially continuous flat surface of the same level is provided adjacent said conveyor means;

means for activating said rotary power means to index said chain means a predetermined distance after said pushing means has completed the movement of articles onto a plurality of trays; and

pull-out means for moving an accumulated stack of articles from a lowermost horizontal tray to an adjacent surface after said chain means have been indexed forwardly by said rotary power means.

4,397,600

DEVICE FOR FEEDING MATERIAL TO A FURNACE

Isidore Jacubowiez, Paris, France, assignor to Midland-Ross Corporation, Cleveland, Ohio

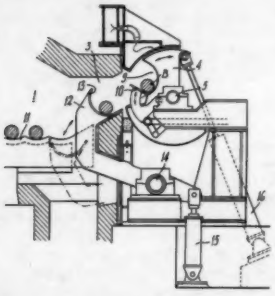
Filed Apr. 10, 1981, Ser. No. 252,953
Int. Cl.³ B65G *25/04, 29/00*
U.S. Cl. 414—152 **4 Claims**

1. An article handling apparatus for transferring articles to be heat treated smoothly and gently from a supply area to walking beams of a heat treating furnace, said article handling apparatus comprising:

a drum mounted for rotation about a substantially horizontal drum axis between an article receiving position and an article discharge position, said drum defining a longitudi-

nal drum transfer cavity including an article receiving surface along which a received article slides by gravity with the drum in the article receiving position and a generally oppositely disposed article discharge surface along which the article is slidably discharge by gravity with the drum in the article discharge position;

at least one retractable stop associated with the drum for movement between a stop position projecting upwardly from the article discharge surface into the drum transfer cavity and displaced from the article receiving surface and a retracted position retracted at least level with the article discharge surface, wherein the article is slidably received under gravity along the article receiving surface into the drum transfer cavity without interference with the stop means when the retractable stop is in the stop position and the drum is in the article receiving position, the article is prevented from sliding under gravity from the drum transfer cavity when the retractable stop is in the stop position and the drum is in the article discharge position, and the article is slidably discharged by gravity from the drum transfer cavity when the retractable stop is in the retracted position and the drum is in the article discharge position;



at least one arm defining an arm transfer cavity adjacent one end, said arm being pivotally mounted for movement between a first position disposed above the walking beams adjacent the drum transfer cavity for receiving the article discharged from the drum transfer cavity in the article discharge position and a second position disposed below the walking beams; and,

means for moving said arm in a controlled manner between said first and second positions for laying the article gently on the walking beams, whereby the walking beams are not damaged by impact on receipt of the article to be heat treated.

4,397,601

CONVERTIBLE RAIL-HIGHWAY VEHICLE

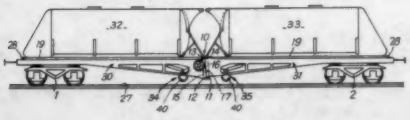
Gustave Noyon, Noisy-le-Grand, France, assignor to Societe d'Ingenierie des Transports, Paris, France

Filed Jan. 6, 1981, Ser. No. 222,927

Claims priority, application France, Jan. 14, 1980, 80 00705; May 6, 1980, 80 10077

Int. Cl.³ B60P *1/61;* B61D *3/16;* B61F *1/00;* B65G *67/02*

U.S. Cl. 414—345 **7 Claims**



1. A rail car for the technical coordination of rail-highway transport, intended for transporting removable bodies which constitute rail car superstructure for rail transport and road vehicle infrastructure for highway transport, said car having an infrastructure which comprises,

a working chassis adapted to support the load as well as the forces of traction and collision with a buffer, the chassis being divided into at least two elements and each element having a collision end and a separation end,

disconnectable connecting means adapted to connect said chassis elements,

a rolling element positioned to support each chassis element adjacent its collision end,

a retractable support device mounted on each chassis element adjacent its separation end,

means on each chassis element for longitudinally guiding a load on said element,

means on at least one chassis element for effecting longitudinal movement of a load, and

means for actuating said support device to control and determine the height at which said separation end is supported,

whereby the separation end of a chassis element can be moved to a position slightly above or below the level of an adjacent road vehicle bed to facilitate the transferring of load to and from said road vehicle.

4,397,602

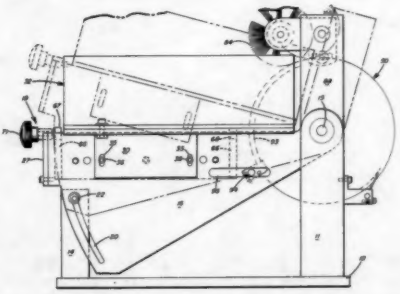
SYSTEM FOR HANDLING AXIAL LEAD COMPONENTS THAT HAVE LOW RATIO OF PARAMAGNETISM TO WEIGHT

Paul C. North, Fredonia, Pa., assignor to GTI Corporation, San Diego, Calif.

Filed Oct. 5, 1981, Ser. No. 308,777

Int. Cl.³ B65G *47/06;* B65B *35/00*

U.S. Cl. 414—415 **12 Claims**



1. A system for handling axial lead components having a low ratio of paramagnetism to weight comprising:

at least one box-like magazine having a bottom, two sidewalls and two endwalls, said magazine having a transverse dimension between sidewalls just greater than the length of the components and their leads, said magazine having a gated opening near the bottom edge of one endwall; and

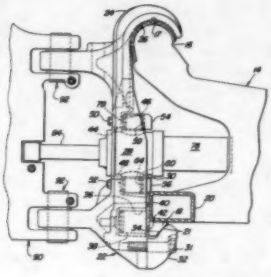
at least one station comprising a frame, means for releasably fastening a magazine to said frame, said frame having a vibrator attached thereto to provide vibration to a magazine fastened thereto, said vibration along the transverse dimension of the magazine, two magnets mounted to said frame arranged on opposite sides of a magazine fastened thereto to provide a magnetic field within said magazine along the transverse dimension, and means for tilting the frame about an axis generally parallel to the transverse dimension to change the attitude of the bottom of the magazine.

4,397,603

BACKHOE SLIDE FRAME AND SWING MECHANISM

Leroy E. Kraske, Dubuque; Gregory K. Werner, Durango, and Lynn I. Beauchamp, Dubuque, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Feb. 18, 1982, Ser. No. 349,797
Int. Cl.³ E02F 3/75
U.S. Cl. 414—695.5 **1 Claim**



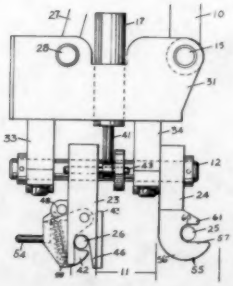
1. In a side-shift backhoe slide frame including upper and lower rail engaging surfaces adapted for engaging and sliding along complementary surfaces of a support frame, the improvement comprising: said slide frame defining a generally rectangular fore-and-aft opening located below the upper rail-engaging surface; upper and lower vertical surfaces respectively forming recessed portions of a front side of the slide frame and bordering said opening respectively at the top and bottom thereof; first and second side-by-side disposed swing cylinders; each of said cylinders being provided with upper and lower aligned vertical stub shafts; an upper-mounting block having a pair of openings respectively rotatably receiving the upper stub shafts of the swing cylinders; a lower-mounting block having a pair of openings, respectively, rotatably receiving the lower stub shafts of the swing cylinders; and means respectively, releasably securing the upper and lower mounting blocks in place against the upper and lower vertical surfaces.

4,397,604

RELEASABLE BUCKET AND OTHER TOOL CONNECTION FOR BACKHOE

Willard E. McCain, 6431 W. Heidler Rd., Fairview, Pa. 16415

Filed Oct. 26, 1981, Ser. No. 314,709
Int. Cl.³ E02F 3/70
U.S. Cl. 414—723 **11 Claims**



1. A bucket support for supporting a bucket on a backhoe dipper stick, said bucket support comprising two spaced, side plates,

pivot means for pivotally connecting said side plates to said dipper stick to pivot about a first axis,

spaced brackets fixed to said spaced plates and extending downward therefrom,

a first carrier and a second carrier spaced from one another and supported on said side plates, said first carrier having a forwardly opening slot in its lower end adapted to receive a pin of a backhoe bucket, said second carrier having two spaced support plates fixed to its sides and extending downwardly therefrom,

a downwardly opening slot in each said spaced support plates,

at least one hook disposed between said spaced support plates and pivot means swingably connecting said hook to said spaced support plates, said hook having a forwardly opening slot, said hook being adapted to swing under a pin supported in said vertically extending slots,

a laterally extending bar attached to said hook and extending laterally thereof and a handle attached to said bar,

two spaced helical tension springs attached at their upper end to said bar,

the lower end of said springs being attached to means on said support plates,

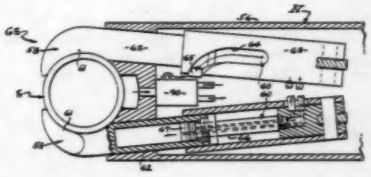
said springs urging said second hook to swing to closed position.

4,397,605

MECHANIZED STAND HANDLING APPARATUS FOR DRILLING RIGS

Charles F. Cowgill, and Frank J. Di Bella, both of 11507 Parkriver Dr., Houston, Tex. 77070

Division of Ser. No. 45,642, Jun. 5, 1979, Pat. No. 4,274,778, which is a continuation of Ser. No. 833,145, Sep. 14, 1977, abandoned. This application May 27, 1981, Ser. No. 267,617
Int. Cl.³ E21B 19/14
U.S. Cl. 414—745 **27 Claims**



1. A "gripper head" for moving pipe stands in a derrick and between selective positions, the gripper head having a vertically disposed substantially flat unobstructed front face, means selectively positioning the gripper head in a disposition with the unobstructed front face thereof to oppose the side of the pipe stand to be moved, at least one pair of laterally spaced and extensible claws carried by and retractile into the confines of the gripper head behind said front face thereof, and means to extend the said claws from the unobstructed front face and into embraced engagement with a pipe stand juxtaposed to the said front face and to retract the said claws through the unobstructed front face and into the confines of the gripper head to be totally housed therein after release of the pipe stands.

4,397,606

ARTICLE HANDLING APPARATUS AND METHOD FOR RESTOCKING STORE SHELVES

Rose L. Bruton, P.O. Box 621, Delta, Colo. 81416

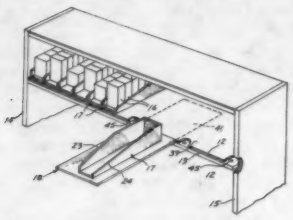
Filed Dec. 11, 1980, Ser. No. 215,158
Int. Cl.³ A47F 3/06
U.S. Cl. 414—786 **15 Claims**

1. In apparatus for use in handling articles supported on a display shelf, the combination comprising:

a plurality of multiple article display containers having side

walls for isolating juxtaposed article groupings and for stabilizing contained articles, supported side by side on said display shelf, each said container displaying in use, a plurality of freestanding, tippable articles in front-to-rear array; and

a caddy shelf for supporting a selected of said containers removed from said display shelf, said caddy shelf being detachably mounted to and projecting forwardly of said



display shelf and substantially in line with a selected article container that is to be removed, said caddy shelf being locatable at different positions laterally of said display shelf, whereby in use an article container on said display shelf is removed forwardly from said display shelf and supported on said caddy shelf forwardly on said display shelf and then repositioned rearwardly on said display shelf.

4,397,607

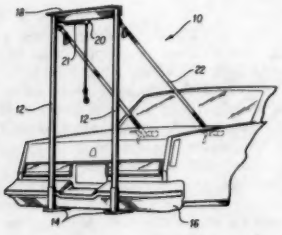
METHOD OF CARRYING A WHEELCHAIR

Authur H. Neill, Jr., 12408 Keynote La., Bowie, Md. 20715, and John A. Hinch, 9127 5th St., Lanham, Md. 20801

Filed Jan. 22, 1982, Ser. No. 341,732

Int. Cl.³ B60R *9/06*

U.S. Cl. 414—786 **8 Claims**



1. The method of carrying a wheelchair on a vehicle, the vehicle having affixed to its rear bumper a carrier of the type comprising two vertical upright members and a horizontal cross-member and having a lifting device on its horizontal member, which comprises:

a. affixing one end of a cable to said lifting device;

b. positioning said wheelchair with its back facing the rear of said vehicle and its rear wheels touching said rear bumper;

c. affixing the other end of said cable to said wheelchair; and

d. raising said wheelchair off the ground by means of said lifting device, said rear wheels of said wheelchair rolling up the rear bumper of said vehicle.

4,397,608

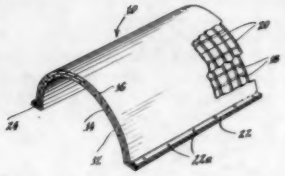
ENERGY-ABSORBING TURBINE MISSILE SHIELD

Iqbal Husain, Brookfield Center; Arnold Gundersen, New Fairfield, and John F. Risley, Roxbury, all of Conn., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed May 1, 1980, Ser. No. 145,507

Int. Cl.³ F01D *25/24*

U.S. Cl. 415—9 **3 Claims**



1. An energy-absorbing turbine missile shield for containing any broken pieces of rotatable parts of a turbine thrown outwardly through a turbine casing with substantial kinetic energy comprising:

(a) at least two rigid spaced concentric curved shells enclosing the turbine casing and formed of ductile stainless steel deformable plastically as well as elastically under impact of said broken turbine pieces to absorb their kinetic energy without resulting in complete penetration through both of said shells;

(b) a plurality of longitudinal spreader beams of ductile metal connecting and spacing apart the two shells; and

(c) a pair of opposed mounting rims formed by opposed edges of at least one of said shells to permit mechanical attachment of the shield with respect to a fixed operating floor.

4,397,609

BANDAGE FOR RADIALLY STRESSING THE SEGMENTS OF A COMPRESSOR ROTOR FOR A TURBINE

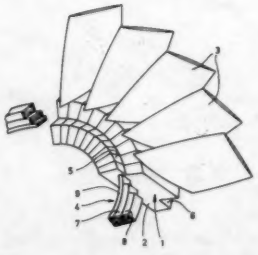
Richard Kochendorfer, Silberwaldstrasse 1, 7000 Stuttgart 75, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,013

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1980, 3037388

Int. Cl.³ F01D *5/30, 5/00*

U.S. Cl. 416—214 R **10 Claims**



1. Annular retainer means for maintaining in an assembled condition a segmented hollow rotor formed from a plurality of circumferentially arranged radial segments (1) each having a base portion (2) and a blade portion (3), the base portions of said segments being in lateral engagement and the blade portions extending radially outwardly from said base portion, respectively, said base portions including axially extending shoulders (5,6) which cooperate to define at each end of the

rotor a cylindrical support surface, said retainer means comprising

(a) a first annular retainer member (7,10) mounted concentrically about one of said cylindrical support surfaces, said first retainer member being formed of first fiber-reinforced material having a relatively low stiffness and a relatively high tensile strength, said first retainer member being shrunk fit upon said cylindrical support surface to initially compress said segment base portions radially inwardly when the rotor is stationary; and

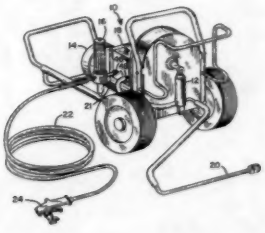
(b) a second annular retainer member (8,11) arranged in contiguous coaxial relation with said first retainer member, said second retainer member being formed of a second fiber-reinforced material having a relatively high stiffness and a relatively low tensile strength, whereby upon rotation of the rotor assembly to a velocity at which the centrifugal force generated by the rotor segments overcomes the initial compression produced by said first retainer member, said second retainer member operates to limit the degree of expansion of said first retainer member.

4,397,610

RECIPROCABLE PUMP WITH VARIABLE SPEED DRIVE

Duane D. Krohn, Westminister, Colo., assignor to Graco Inc., Minneapolis, Minn.

Filed Mar. 9, 1981, Ser. No. 241,669
Int. Cl.³ F04B *49/06*
U.S. Cl. 417—44 **13 Claims**



1. A variable speed reciprocable pumping system having a DC drive motor mechanically linked to drive a reciprocable pump, comprising

(a) means for sensing the pressure of liquid pumped by said pump, including means for developing a voltage representative of said pressure;

(b) means for manually setting a voltage representative of a pressure set point for said pump;

(c) means for comparing said manually set voltage and said pressure developed voltage, and for generating an error signal representative of said comparison;

(d) means for transforming said error signal into a timed signal having a time duration proportional to said error signal;

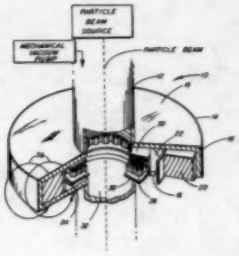
(e) a silicon controlled rectifier circuit for transforming an AC power voltage input to a DC voltage output, having SCR gates for controlling the magnitude of said DC voltage output, said circuit DC voltage output being coupled to said DC drive motor, and said SCR gates being coupled to said timed signal.

4,397,611

PARTICLE BEAM INSTRUMENTATION ION PUMP

John C. Wiesner, Hayward, and Lee H. Veneklasen, Castro Valley, both of Calif., assignors to The Perkin-Elmer Corp., Norwalk, Conn.

Filed Jul. 6, 1981, Ser. No. 280,414
Int. Cl.³ F04B *37/02*
U.S. Cl. 417—49 **6 Claims**



1. In a column configuration with a throughbore through which a particle beam may be directed as part of a particle beam optical instrument and subject to evacuation by an ion pump, said ion pump having a pumping cell means and magnetic means within a housing which defines a pumping chamber opening into said throughbore, the improvement in the combination of the column for the particle beam optical instrument and ion pump wherein, said housing and said pumping chamber are substantially toroidal in configuration,

said pumping cell means comprises in part a plurality of honeycomb cell means of toroidal configuration, cathode plate means for said honeycomb cell means spaced apart therefrom and conforming to the toroidal configuration of said honeycomb cell means, said honeycomb cell means and cathode plate means completing said pumping cell means, and

magnetic means within said housing and toroidal in configuration for providing a toroidal symmetrical, magnetic circuit with said housing thus defining an ion pump in combination with said column.

4,397,612

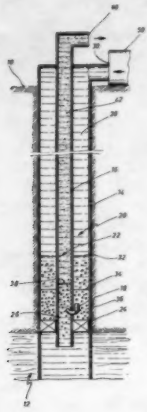
GAS LIFT UTILIZING A LIQUEFIABLE GAS INTRODUCED INTO A WELL

Alexander I. Kalina, 12439 Millbanks, Houston, Tex. 77031

Continuation-in-part of Ser. No. 13,893, Feb. 22, 1979, abandoned. This application Dec. 10, 1980, Ser. No. 214,979
Int. Cl.³ F04F *1/20*
U.S. Cl. 417—54 **20 Claims**

1. A gas lift method for lifting a well fluid from a well comprising first and second well conduits leading to a downhole region of the well, the conduits being in communication with each other in a downhole region and the second well conduit being in communication with well fluid in the well, the method comprising feeding a liquid lifting medium under pressure into the first well conduit to maintain a liquid column of liquid lifting medium in the first well conduit to provide a significant liquid column pressure at the downhole region of the first well conduit for lifting medium to pass into the second well conduit, the composition of the liquid lifting medium being such in relation to the temperature prevailing in the first well conduit, that the lifting medium will be heated above its critical temperature in a downhole vaporization region of the first well conduit for the lifting medium to change into a gas phase below

the liquid column in the first well conduit, and the lifting medium being miscible with the well fluid to mix with well



fluid and cause vaporization for the lifting of well fluid in the second well conduit.

4,397,613

COMPRESSION WAVE MACHINE

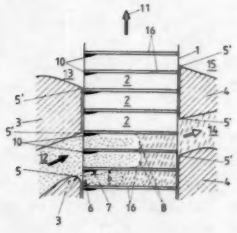
Jakob J. Keller, Killwangen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 9, 1981, Ser. No. 232,622

Claims priority, application European Pat. Off., Mar. 17, 1980, 80200243

Int. Cl.³ F04F *11/02*

U.S. Cl. 417—64 **5 Claims**



1. In a gas dynamic compression wave machine of the type comprising a bucket wheel rotating centrally between lateral housing parts on air and gas sides of the wheel, each housing part including inlet and outlet orifices, wherein a high pressure gas inlet orifice has a profiled configuration at its opening toward the bucket wheel, the improvement wherein the profile is on a leading edge of said orifice and is of convex shape to prevent shear layer vortexes.

4,397,614

UNBALANCED SPOOL

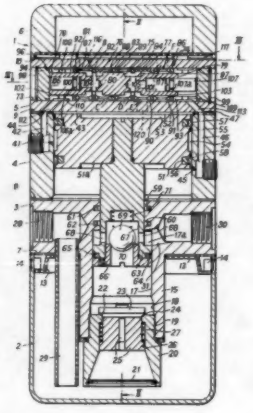
Donald A. Larner, Kingston upon Thames, England, assignor to Fluid Devices Limited, Great Britain

Continuation of Ser. No. 954,291, Oct. 24, 1978, abandoned. This application Dec. 21, 1981, Ser. No. 332,472

Int. Cl.³ F04B *35/00*; F01L *25/04*

U.S. Cl. 417—403 **9 Claims**

1. A fluid operated valve comprising a member slidable in a bore having first and second ends under the action of fluid pressure between a position at said first end in which it connects an inlet port for the fluid with a first outlet port remote from said first end and a position at said second end in which it connects the inlet port with a second outlet port remote from said second end; longitudinal first and second counterbores respectively at the ends of the member remote from said first and second ends and a bias piston slidable in each counterbore to act between a base of that counterbore and the associated end of the bore; first means for applying fluid pressure derived from the first outlet port to the first end of the bore and means for relieving pressure from the second end of the bore and first passage means for simultaneously applying said fluid pressure derived from the first outlet port to the interior of the first counterbore; second means for alternatively applying fluid pressure derived from the second outlet port to the second end of the bore and means for relieving pressure from the first end of the bore and second passage means for simultaneously applying said fluid pressure derived from the second outlet port to the interior of the second counterbore so that when the

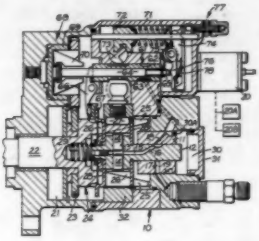


member is located at the first end of the bore a differential force is applied thereto to move it away from said first end and when the member is located at the second end of the bore a differential force is applied thereto to move it away from said second end; means for relieving pressure from the interior of the first counterbore as the member moves towards the second end and before the inlet port is disconnected from the first outlet port and from the first end of the bore, so that the remainder of the movement of the member towards the second end is rapidly accelerated and is then fully completed by application of said fluid pressure derived from the second outlet port through the second passage means to the second counterbore; and means for relieving pressure from the interior of the second counterbore as the member moves towards the first end and before the inlet port is disconnected from the second outlet port and from the second end of the bore, so that the remainder of the movement of the member towards the first end is rapidly accelerated and is then fully completed by application of said fluid pressure derived from the first outlet port through the first passage means to the first counterbore.

4,397,615
FUEL INJECTION PUMPING APPARATUS

Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 2, 1981, Ser. No. 280,124
Claims priority, application United Kingdom, Jul. 26, 1980, 8024539; Dec. 31, 1980, 8041538
Int. Cl.³ F04B 49/00, 19/22
U.S. Cl. 417—221 5 Claims



1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine and comprising a body part, a rotary distributor member located in the body part, an outwardly extending bore formed in the distributor member and a plunger means located therein, means for feeding fuel to said bore to move the plunger means outwardly during a filling stroke of the apparatus, a delivery passage communicating with the bore and arranged to register with an outlet port in the body part during a delivery stroke of the apparatus, a cam for imparting inward movement to the plunger means to effect delivery of fuel, stop means for limiting the outward movement of the plunger means, said stop means being arranged so that the amount of fuel delivered during the delivery stroke depends upon the axial setting of the distributor member, resilient means biassing the distributor member in one axial direction, a variable volume chamber defined in part by an outwardly extending face of the distributor member or a part movable therewith, valve means for controlling the pressure of liquid in said chamber thereby to determine the axial setting of the distributor member, said valve means including an axially adjustable rod and a sleeve in which said rod is mounted, said rod and sleeve being movable relative to each other, a variable orifice defined by the rod and sleeve and through which liquid under pressure can flow from said chamber, means for adjusting the axial setting of the rod and a linkage extending between the sleeve and the distributor member, said sleeve being axially movable by said linkage, whereby for a given change in the setting of said rod, the pressure in said chamber will vary and the distributor member will move an amount determined by the change in the setting of said rod.

4,397,616
PUMP DRIVING MECHANISM

Toshio Tanabe, and Shinsaku Yasunaka, both of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

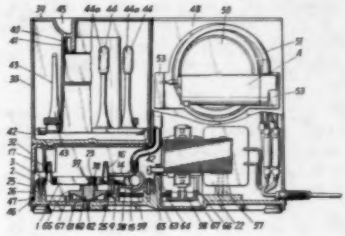
PCT No. PCT/JP80/00098, § 371 Date Mar. 14, 1981, § 102(e) Date Mar. 12, 1981, PCT Pub. No. WO81/00288, PCT Pub. Date Feb. 5, 1981
PCT Filed May 9, 1980, Ser. No. 253,525
Claims priority, application Japan, Jul. 14, 1979, 54-97164[U]
Int. Cl.³ F04B 9/02
U.S. Cl. 417—362 8 Claims

1. A driving mechanism for a fluid pump of the type comprising a fluid-conducting cylinder, said driving mechanism comprising:

a pair of elastically flexible generally U-shaped leg means, each including first and second legs which flex toward and away from each other about a bend at which said first and second legs are joined, said first leg of each leg means being fixed at a free end thereof, with the free ends of said second legs opposing each other,

a piston body coupled to said free ends of said second legs so as to be reciprocable in a fore-aft direction between said fixed free ends of said first legs, said piston body comprising a rigid generally rectangular shaped frame having opposing ends spaced in said fore-aft direction,

a piston rod connected to said piston body and arranged to



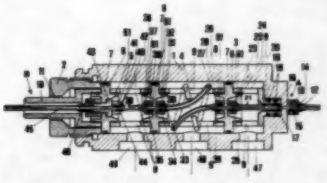
be reciprocable in said cylinder in a direction parallel to said fore-aft direction for pumping fluid through said cylinder, and

elastically flexible arm means connected to said frame and disposed therewithin, said arm means including means connectible to an eccentric motor-driven shaft, said arm means being elastically flexible in directions transversely of said fore-aft reciprocable direction and being arranged to transmit motion to said frame in said fore-aft direction.

4,397,617
HEART PUMP FOR THE CIRCULATION OF BLOOD OUTSIDE THE BODY OF A LIVING SUBJECT

Carbonini Sergio, and Giancarlo Pelosi, both of Rome, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Oct. 22, 1980, Ser. No. 199,494
Claims priority, application Italy, May 12, 1980, 21982 A/80
Int. Cl.³ F04B 43/12
U.S. Cl. 417—475 5 Claims



1. A heart pump for the circulation of blood outside of the body of a living subject which comprises:

(a) a pump body (1) made of rigid material;

(b) a flexible tube made of elastic material through which the blood flows;

(c) sealing means (6) disposed in the interior of the body of the pump (1) capable of dividing the internal volume of the body (1) into separate chambers (3,4,5), a segment of the flexible tube going through each of the chambers, said chambers being completely filled of an incompressible fluid;

(d) means for preventing blockage of the flexible tube arranged in alignment with said sealing means (6) and capable of preventing the collapse of the flexible tube in the location corresponding to said sealing means;

(e) compression means associated with the valve body (1) and communicating with its interior being capable of imparting to the fluid contained in said chamber an alter-

nating periodic action of compression and expansion, a central body (8) within the interior of the body of the pump made of rigid material; and

(f) wherein the first and the last chambers (3,5) are of length shorter than the central chamber (4), the length of the flexible tube segment (30) in said central chamber (4) being greater than the length of the flexible tube segments (21,39) respectively, in the first and last chambers (3,5), said segments of the flexible tube (21,39) in the first and the last chambers (3,5) being essentially rectilinear and the segment of the flexible tube (30) in the interior of the central chamber (4) is wound in a spiral fashion around said central body (8).

4,397,618

ROLLING PISTON COMPRESSOR WITH LOCKING DEVICE FOR THE SEPARATING SLIDE

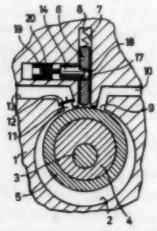
Adalbert Stenzel, Stuttgart, Fed. Rep. of Germany, assignor to Bitzer-Kuhlmaschinenbau GmbH & Co. KG, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,639

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946906

Int. Cl.³ F04C *18/00, 29/10;* **F04B** *49/02*

U.S. Cl. 418—23 **7 Claims**



1. A rolling piston compressor comprising

a casing of circular cross-section having an inlet port for drawing in a medium which is to be compressed and an outlet port for the delivery of the compressed medium;

a drivable eccentric shaft;

a rolling piston supported within the casing on said drivable eccentric shaft so as to be freely rotatable thereon and adapted to roll on the internal surface of the casing in the course of rotation of the shaft;

a spring mounted in said casing;

at least one separating slide slidably supported in the casing and resiliently urged in a first direction by the action of said spring against the circumference of the rolling piston;

said slide being disposed between said inlet port and said outlet port, said slide having a bearing surface and having a free edge adjacent said rolling piston,

a device for locking said separating slide in a position in which the free edge does not bear on the rolling piston circumference, at least during one part of the rolling piston motion;

said locking device including a ratchet bolt which is slidably transversely relative to said first direction between a first position, in which it releases the separating slide, and a second position in which it fixes the separating slide in the position in which it is withdrawn from the rolling piston;

said ratchet bolt having a support surface which is inclined relative to its sliding direction and on which said bearing surface of the separating slide bears when the ratchet bolt is advanced from said first position to said second position and an abutment;

said angle of inclination being selected so that said separating slide is withdrawn from the rolling piston when the said ratchet bolt is advanced;

said abutment limiting the advance motion of said ratchet bolt; and

said free edge of the separating slide in said first position extending slightly into the casing.

4,397,619

HYDRAULIC DRILLING MOTOR WITH ROTARY INTERNALLY AND EXTERNALLY THREADED MEMBERS

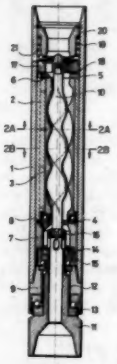
Ödon Lajos Nátkai, and Elek Ujfalusi, all of Budapest, Hungary, assignors to Orszagos Köolaj és Gázipari Tröszt, Budapest, Hungary

Filed Mar. 14, 1980, Ser. No. 130,563

Claims priority, application Hungary, Mar. 14, 1979, OA 619

Int. Cl.³ F03C *2/22;* **E21B** *4/02*

U.S. Cl. 418—48 **1 Claim**



1. A hydraulic drilling motor with an external jacket and a driving shaft, for oil and water well drilling with axial flow, consisting of an internally threaded rotary chamber member seated on a thrust bearing of said motor, wherein

(a) the rotary axis of said chamber member is parallel to the direction of flow;

(b) a rotary externally double-threaded screw spindle having an elliptical cross-section is eccentrically arranged in said chamber member and is centrally arranged in relation to said external jacket and is rigidly fixed to said driving shaft; and

(c) the internal surface of said chamber member is a single arc epicycloid spiral surface.

4,397,620

ROTARY BLADED COMPRESSOR WITH SEALING GAPS AT THE ROTARY ENDS

Mitsuo Inagaki, and Hideaki Sasaya, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 21, 1981, Ser. No. 256,250

Int. Cl.³ F04C *18/00, 27/00*

U.S. Cl. 418—141 **2 Claims**

1. A rotary blade compressor with sealing gaps at the rotor ends comprising:

a cylindrical housing having an inner peripheral surface and inner end surfaces;

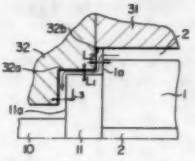
a cylindrical rotor eccentrically supported in said cylindrical housing, said cylindrical rotor being formed with a plurality of grooves; and

a plurality of movable blades each slidably fitted in one of said plurality of grooves in said cylindrical rotor and contacting said inner peripheral surfaces of said cylindrical housing to define a plurality of spaces for compressing a fluid; the improvement comprising:

two rotary disc-shaped members located on one of opposite end surfaces of said cylindrical rotor, said rotary disc-shaped members being of a diameter slightly smaller than that of said cylindrical rotor;

two disc-shaped recesses each formed on one of said inner end surfaces of said cylindrical housing for receiving one of said plurality of rotary disc-shaped members;

first gaps respectively defined between annular walls of said



recesses and cylindrical outer surfaces of said rotary disc-shaped members;

second gaps respectively defined between outer end surfaces of said cylindrical rotor and the inner end surfaces of said cylindrical housing; and

third gaps respectively defined between outer end surfaces of said disc-shaped members and the inner end surfaces of said recesses, said first gaps being smaller than said second and third gaps.

4,397,621

VANE OF A VANE PUMP FOR HYDRAULIC OPERATING MEDIUM

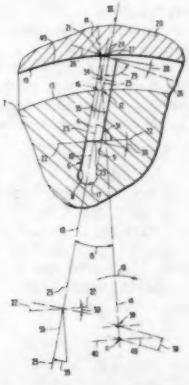
Jürgen Pickard, Wernau, and Jürgen Frank, Ebersbach, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 301,945

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034411

Int. Cl.³ F01C *1/00*; F03C *2/00*

U.S. Cl. 418—236 **17 Claims**



1. A vane for a hydraulic vane pump including a rotor means, a stator means, slot means in the rotor means for slidingly accommodating the vane symmetrically in parallel to a central plane of the slot means, the vane including a convex sliding sealing surface cooperable with an inner jacket of the stator means, and a pressure surface facing a bottom end of the slot means, characterized in that the sliding sealing surface includes a crown, the crown is displaced with respect to a principle plane of the vane in a direction opposite to a direction of rotation of the rotor means, the sealing surface means forms, in a direction of rotation of the rotor means, a wedge-shaped area located in a first plane, the pressure surface is disposed in a second plane, the second plane forms with the principle plane of the vane an angle, a re-setting angle is formed between the plane in which the pressure surface is located and a line extending perpendicular to the principle plane of the vane, the angle and re-set angle form a 90° angle, the angle is such that a pressure at the pressure surface comprises a balancing pressure component directed approximately at right angles to the principle plane of the vane and in a direction opposite the rotational direction of the rotor means.

4,397,622

METHOD OF AND APPARATUS FOR CONTINUOUS FRICTION-ACTUATED EXTRUSION

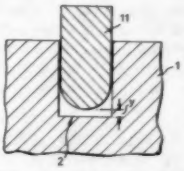
John B. Childs, London, and Norman R. Fairey, Carshalton, both of England, assignors to BICC Limited, London, England

Filed Feb. 6, 1981, Ser. No. 232,410

Claims priority, application United Kingdom, Feb. 19, 1980, 8005498

Int. Cl.³ B22F *3/02*; B21C *23/01*

U.S. Cl. 419—67 **3 Claims**



1. A continuous friction-actuated extrusion process comprising forming a passageway extending from an entry end to an exit end between an arcuate first member and a second member in the form of a wheel having a circumferential groove formed in its peripheral surface into which groove the first member projects while rotating the wheel in such a direction that those surfaces of the passageway constituted by the groove travel from the entry end towards the exit end, feeding metal into the passageway at the entry end and extruding it from the passageway through at least one die orifice located in or adjacent to an abutment member extending across the passageway at the exit end thereof characterised by the facts that the abutment member (instead of being large enough to block the end of the passageway) is of substantially smaller cross-section than the passageway and leaves a substantial gap between the abutment member and the groove surface and that the metal is allowed to adhere to the groove surface, whereby a substantial proportion of the metal (as distinct from the inevitable leakage of flash through a working clearance) extrudes through the clearance and that this metal remains as a lining in the groove to re-enter the passageway at the entry end while the remainder of the metal extrudes through the die orifice(s).

4,397,623

APPARATUS FOR THE PRODUCTION OF MINERAL FIBERS BY MEANS OF ROTATING DISCS

William F. Porter, Tacoma, Wash., and Donald R. Janninck, Chicago, Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Mar. 2, 1981, Ser. No. 239,262

Int. Cl.³ B01J *2/02*

U.S. Cl. 425—8 **6 Claims**

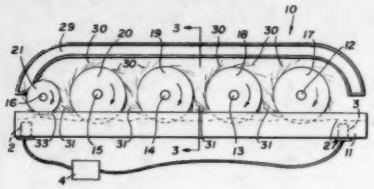
1. An apparatus for producing mineral fibers from a molten mineral composition, which comprises,

a. a container for holding said mineral composition in molten form, and means for heating said composition and maintaining said composition in molten form,

b. a plurality of discs affixed to spaced-apart substantially

parallel horizontal shafts, said discs being in substantially coplanar arrangement, and being positioned so that the lower edge of all but the last one of said discs are immersed in said molten composition during operation, and

c. means for rotating all said shafts and discs affixed thereto in the same angular direction, said discs being arranged and dimensioned to propel a portion of molten slag from



their peripheries in the form of elongated droplets or streams, a portion of said elongated droplets or streams being propelled on a vector tangent from one disc to another, said elongate droplets or streams passing through a cooling zone of air where they become solidified as fibers and removed from said apparatus, the portion of said molten slag removed from said container by said discs but not formed into fibers returning to said container.

4,397,624

DEVICE FOR RENDERING A CABLE LONGITUDINALLY WATERTIGHT

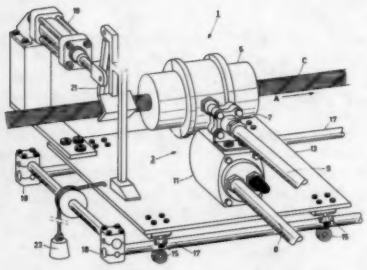
Antonius P. Haverkamp, Alphen a/d RIJN, and Klaas W. Kerkhof, Aalst-Waalre, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,702

Claims priority, application Netherlands, Oct. 30, 1980, 8005951

Int. Cl.³ B29F *3/10, 3/01*

U.S. Cl. 425—113 **6 Claims**



1. A device for rendering a cable comprising a stranded core longitudinally watertight by the block-wise application under pressure of sealing material in and around the stranded cable core, while said cable core is longitudinally advancing, said device comprising an injection head which can be intermittently displaced in the longitudinal direction of the cable by means of a guide in synchronism with the speed of advancement of the cable core and which also comprises a feed-through chamber which is connected to a supply duct for the sealing material, the supply of which material is dosed by means of a supply valve, characterized in that the synchronized controlled displacements of the injection head are provided in the device by a drive mechanism comprising a driving element which is coupled to the injection head and which is controlled by a pneumatic unit connected to a compressed air duct including a control valve.

4,397,625

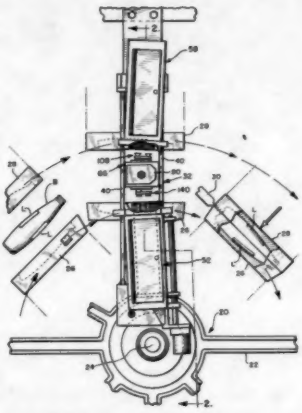
IN-MOLD LABELLER

Ernest W. Hellmer, and George F. Bartimes, both of Chicago, Ill., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Oct. 14, 1981, Ser. No. 311,481

Int. Cl.³ B31B *1/12*

U.S. Cl. 425—135 **24 Claims**



1. An apparatus for applying labels to internal surfaces of mold cavities, said apparatus comprising a hopper for labels, a carriage, a pick-up head carried by said carriage for picking up labels from said hopper and placing such labels in open mold halves, guide means supporting said carriage for movement of said carriage along a fixed path to move said pick-up head between a first position aligned with said hopper to a second position in between the path of open mold halves back and forth positioning means connected to said carriage for selectively moving said pick-up head to a selected one of said first and second positions, and extensible means carried by said carriage for selectively moving said pick-up head between a retracted position and label engaging and discharge positions.

4,397,626

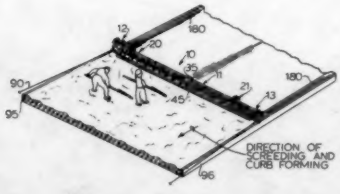
VIBRATING SCREED AND CURB-FORMING APPARATUS

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Filed Apr. 6, 1981, Ser. No. 251,970

Int. Cl.³ B28B *1/08*

U.S. Cl. 425—64 **5 Claims**



1. A lightweight, portable, concrete speed comprising:

(a) a base screed unit including:

(i) an elongated open frame structure comprising at least one integral frame unit and if more than one a group of interconnected separable integral open frame units and having fixedly mounted on said structure and extending for the length thereof a plurality of parallel, spaced apart screed plates for engaging and leveling concrete as the screed is moved over the concrete;

(ii) a base unit vibrating element comprising a base unit semi-flexible shaft rotatively supported in said frame structure and extending for the length thereof and having means operatively associated with said base unit shaft enabling said base unit shaft when driven to impart vibrations to said frame structure and throughout the length of each of said screed plates; and

(iii) drive means mounted intermediate the ends of said base screed unit and connected to drive said base unit shaft to impart said vibrations to said base unit frame structure and said plates; and

(b) a pair of lightweight, portable and detachable auxiliary combined screed and curb-forming units, each comprising:

(i) an elongated integral open frame structure adapted to mate the open frame structure of said base screed unit and having fixedly mounted on said auxiliary unit frame structure and extending for the length thereof a plurality of parallel, spaced apart auxiliary screed plates mating those on said base screed unit for engaging and leveling concrete for a portion of the length of the auxiliary unit as an extension of the length engaged and leveled by said base unit screed plates and having operatively associated with said auxiliary screed plates curb-forming plate means for supporting the screed at both ends thereof and for engaging the concrete and for the remaining portion of the length of the auxiliary unit forming a curb as an extension of the length engaged and leveled by said auxiliary screed plates;

(ii) means for detachably connecting adjacent end portions of said base unit and auxiliary unit open frame structures in a predetermined angular relationship;

(iii) a hopper mounted on said auxiliary unit frame structure having an open top and an open bottom extending through said curb-forming means;

(iv) first vibratory means operative in association with said base unit shaft being driven to impart vibrations to said auxiliary unit structure and screed plates; and

(v) second vibratory means operative in association with said base unit shaft being driven to cause any concrete mix placed in said hopper to be vibrated during forming of said curb;

whereby when said drive means on said base unit operates and rotates said base unit shaft, said pair of auxiliary combined screed and curb-forming units mounted at the ends of said base unit are enabled to simultaneously level the concrete and form curbs at both ends of said base unit simultaneous with said base unit screeding the concrete therebetween.

4,397,627

APPARATUS FOR MOLDING A RECORDED DISC

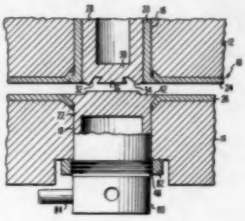
James H. Helm, Elwood, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,424
Int. Cl.³ B29C *17/00*
U.S. Cl. 425—290 **9 Claims**

1. In an apparatus for molding a recorded disc which includes a pair of mold plates having opposed surfaces and central openings therethrough from said opposed surfaces, and a center plate in each of said openings for securing the inner edge of a stamper to the respective mold plate, the improvement comprising

one of said center plates having an internal passage for receiving a heat control medium, and inlet and outlet passages extending from the internal passage to a surface of the center plate for permitting the flow of the heat control medium into and out of the internal passage, and an adapter attached to the center plate and having a surface which abuts said surface of the center plate, said adapter having an inlet port, an outlet port and means for universally connecting the inlet and outlet ports to the inlet and outlet passages respectively of the one center plate, said universal connection including a pair of concentric annular grooves in said surface of the adapter, each of said annular grooves being aligned with a separate one of the inlet and outlet passages in the center plate and a separate passage connecting each of said ports to a respective one of the annular grooves.

5. A center plate for use in a molding apparatus comprising



a cylindrical body having a top surface and an internal recess extending from its bottom and to a point spaced from its top surface,

a plug extending across the internal recess and secured to the body adjacent the bottom end of the body, said plug having a pair of spaced passages extending therethrough from its bottom surface,

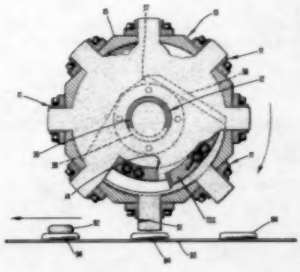
an adapter secured to the plug, said adapter having a pair of spaced ports and a separate universal connection being each of said ports and a separate one of the passages in the plug.

4,397,628

EXTRUSION CYLINDER ASSEMBLY

Albert A. Pinto, White Plains, N.Y., and George Ryder, West Orange, N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Feb. 1, 1982, Ser. No. 344,581
Int. Cl.³ B29F *3/01*; A21C *3/04, 11/16*
U.S. Cl. 425—376 B **14 Claims**



1. An extrusion cylinder assembly for extruding a soft plastic material comprising in combination a rotating hollow cylinder having circumferentially spaced extrusion ports, means for continuously adding extrusion material to the interior of the cylinder, means forming a circumferential stationary channel aligned with said ports within the cylinder facing the inner surface of the cylinder wall such that the extrusion material with said cylinder is carried into said channel by engagement with said cylinder wall, and dam means providing a restriction

within said channel so that the extrusion material carried into said channel is forced out said die ports as they move along said channel toward said restriction.

4,397,629

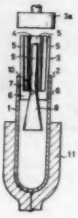
APPARATUS FOR DRAWING MOUTH-NECK PORTIONS OF SYNTHETIC RESIN BOTTLES

Masao Akutsu; Akiho Ota, and Takuzo Takada, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 96,767, Nov. 23, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,257

Int. Cl.³ B29C *17/07, 17/02*

U.S. Cl. 425—525 **4 Claims**



1. Apparatus for forming a complete synthetic resin bottle from a parison having an open mouth neck portion at one end and a closed barrel portion at the other end, comprising:

a holding member for holding a parison composed of synthetic resin material;

means for heating a mouth-neck portion of the parison to a temperature high enough to permit reshaping of the heated synthetic resin material;

a cylindrical longitudinally segmented molding tool, for insertion into said mouth-neck portion, which tapers inwardly from a first top diameter to a second narrower bottom diameter, adjacent segments defining therebetween a plurality of longitudinal v-shaped openings on the face of said molding tool, said molding tool carrying a rod between the segments thereof;

means for pulling the rod through the molding tool between the segments to radially outwardly expand the segments and increase the bottom diameter of the molding tool, whereby the mouth-neck portion of the parison is radially expanded; and

means for blow-molding the remaining portion of the parison to form a barrel portion of a complete bottle.

4,397,630

APPARATUS FOR LOADING AND INJECTION UNIT OF AN INJECTION MOLDING MACHINE

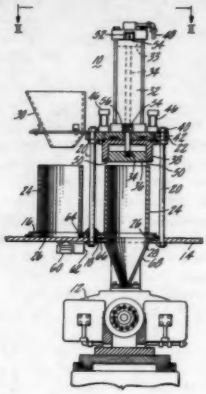
Gregory W. Meeker, Webster, N.Y., assignor to USM Corporation, Farmington, Conn.

Filed Apr. 20, 1981, Ser. No. 255,862

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—582 **2 Claims**

1. A molding material stuffing mechanism for an injection molding machine comprising means for supplying bulk molding material; at least two open-ended containers; means for moving the containers between the supplying means where each container receives a charge of the material and an inlet for the molding machine; and a plunger movable through the container located at the inlet for forcibly ejecting the material from the container into the inlet, the moving means including a plate for closing one end of each container to support material deposited from the supplying means into the container, the plate also having an opening for directing material ejected from the container into the inlet, the containers being carried by a turntable rotatable on the plate between the supplying



means and the opening in the plate, the turntable having openings underlying the containers.

4,397,631

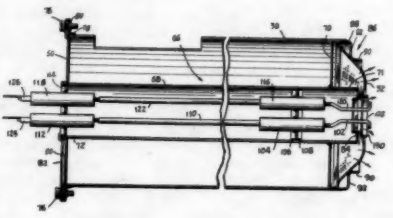
PRE-MIX FORCED DRAFT POWER GAS BURNER

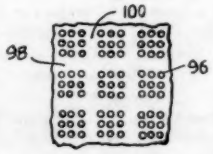
Leonard A. Fisher, Granby, Conn., assignor to The Carlin Company, Windsor, Conn.

Filed Sep. 8, 1980, Ser. No. 185,175

Int. Cl.³ F23Q *3/00*

U.S. Cl. 431—114 **9 Claims**





1. A gas combustion burner, comprising in combination:

(a) a burner head for gaseous fuel, comprising an annular burner plate having inner and outer peripheries, and including a combustion face, said burner plate having and being covered over its entire effective surface with a multiplicity of groups of apertures to enable the gaseous fuel to pass therethrough for ignition at the combustion face thereof, and having a multiplicity of juxtaposed, solid avenue portions separating said groups of apertures,

(b) said apertures and solid avenue portions forming a predetermined pattern on said combustion face characterized by the apertures of the groups being closely spaced with

respect to each other so as to permit the flow of gaseous fuel through the plate at designated areas and the avenue portions preventing the flow at adjoining areas thereby to prevent flame blow-out while at the same time minimizing combustion noise,

(c) said burner plate comprising sheet metal and having a circular ignition ring secured to it at a location juxtaposed to and spaced outward from the inner periphery, said ring surrounding an apertured circular area of the plate,

(d) one side of the annular area of said burner plate having burrs surrounding the apertures thereof and forming a rough side on said plate,

(e) an air tube carrying said burner plate adjacent one of its ends, said plate spanning the end area of the tube,

(f) that side of the annular area of the burner plate which has said burrs and rough side facing inwardly of said air tube, and

(g) an ignition electrode passing through the inner periphery of the burner plate and through said ignition ring, for cooperation with the latter to ignite gas passing through said annular area of the plate.

4,397,632

VAPORIZED TYPE LIQUID FUEL COMBUSTION APPARATUS

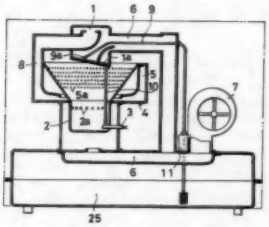
Koji Iritani, and Akihiro Otsuka, both of Kawagoe, Japan, assignors to Sun Pot Kabushiki Kaisha, Saitama, Japan

Filed Aug. 11, 1981, Ser. No. 291,912

Claims priority, application Japan, Sep. 9, 1980, 55-127273; Sep. 9, 1980, 55-127274; Oct. 3, 1980, 55-140466; Feb. 20, 1981, 56-22122; Feb. 20, 1981, 56-22123; Mar. 14, 1981, 56-34829

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—210 **11 Claims**



1. A vaporizing type liquid fuel combustion apparatus comprising a pot burner, vaporizer means for vaporizing liquid fuel provided above the pot burner, a fuel supply pipe for supplying the liquid fuel to the vaporizer means, a vaporized gas combustion burner which has a gas chamber connected to the vaporizer means and which is arranged to heat the vaporizer means, and means including a blower for supplying air to the pot burner and to the vaporizer means.

4,397,633

FUEL OIL HEATER

Charles G. Rowlee, P.O. Box 434, Finland, Minn. 55603

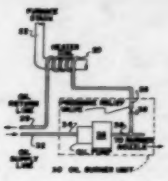
Filed Aug. 27, 1981, Ser. No. 296,673

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—215 **6 Claims**

1. Apparatus for heating the fuel oil that is supplied to an oil burner furnace, where the oil burner furnace is fitted with an oil burner unit that pumps oil from a supply line leading from a fuel tank into an oil burner nozzle and also pumps oil through a pressure relief valve to an oil return line, and where the furnace is fitted with a stack to carry hot exhaust furnace gases to a flue comprising

means to heat the oil in the return line utilizing the heat of the exhaust gases of said stack, and



means to heat the oil in the supply line utilizing the heat of the oil heated in the return line.

4,397,634

SURGICAL PINS AND METHOD

Anthony J. Biggs, 9 Pulman La., Godalming, Surrey, England

Filed Apr. 29, 1980, Ser. No. 144,928

Claims priority, application United Kingdom, Jun. 20, 1979, 7921416

Int. Cl.³ A61C *5/04*

U.S. Cl. 433—225 **7 Claims**

1. A self-tapping dental pin which is formed of orthopaedic stainless steel which has been vacuum-annealed to an extent sufficient to render it plastic in the cold and of uniform light color, which pin is comprised by a disposable hand wrench and is intended for emplacement in an undersized bore drilled into hard tissue, the wrench comprising an elongate body, a first portion of which intermediate the ends thereof is of reduced thickness, a second portion of which is between the first portion and one end and is a thread-forming self-tapping portion constituted by said pin, and a third portion of which at the other end is of cylindrical form having a diameter greater than that of any other part of the elongate body, said third portion being sized for rotation between finger and thumb, said elongated body being integrally formed and said first portion of reduced thickness having shearing means such that when said one end reaches the bottom of the undersized bore, said second portion is unable to rotate further and the application to said third portion of like force to that previously applied for rotation results in said second portion shearing at said first portion from the third portion, and wherein at least the said second portion which is formed of vacuum annealed orthopaedic stainless steel is bendable by more than 90° after shearing from said third portion.

4,397,635

READING TEACHING SYSTEM

Curtis A. Samuels, 1220 Oxford St., Berkeley, Calif. 94709

Filed Feb. 19, 1982, Ser. No. 350,447

Int. Cl.³ G09B *17/00*

U.S. Cl. 434—178 **18 Claims**

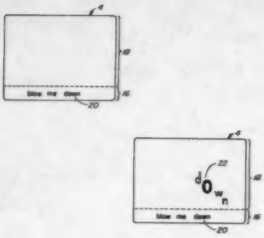
1. A method for teaching reading using an audio-visual projection device, said device including a visual display area, the method comprising the following steps:

displaying a set of baseline words at a baseline portion of the display area, said words made up of letters;

displaying a chosen baseline word at a main portion of the display area;

configuring said chosen word at said main portion according to a first speech parameter;

positioning said chosen word in said main portion according to a second speech parameter; and



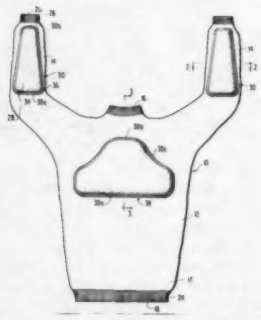
selectively vocalizing said chosen word simultaneously with said chosen baseline word displaying step.

4,397,636

BODY SURFING SHIRT

Samuel H. Ganshaw, Box 81E, Lupton Point, Mattituck, N.Y. 11952

Filed Feb. 10, 1981, Ser. No. 233,259
Int. Cl.³ A63B 31/00
U.S. Cl. 441—65 2 Claims



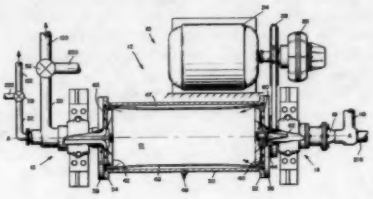
1. A body surfing shirt comprising a garment formed of a cloth tending to cling to the body of the wearer when wet, said garment including a garment body with long sleeves extending therefrom, said sleeves terminating in wrist cuffs, a crew collar at the top of the garment body and a waist band at the bottom of said garment body, with said cuffs, collar and waist band being elastic so as to tightly grip the body of the wearer, buoyant forearm pads carried on the underside of the forearms of said sleeves and a buoyant chest pad carried by said garment body at chest height and on the frontal portion thereof, said garment being devoid of buoyant pads other than said forearm pads and said chest pad, such that said forearm pad and said chest pad provide an extra degree of lift and flotation to increase the speed and distance covered by the wearer when body surfing, ensuring a horizontal body position to overcome the tendency for the surf to drive the surfer forwardly and downwardly, without impairment to the wearer's body movement during body surfing and at the same time without materially interfering with the body surfer's free swimming ability and while particularly protecting the body surfer's arms and upper body chest area from ocean bottom scrapes and cuts upon contact with the beach during body surfing.

4,397,637

APPARATUS AND METHOD FOR CENTRIFUGING

Theodore W. Place, Woodland Hills, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 13, 1981, Ser. No. 282,825
Int. Cl.³ B04B 11/00
U.S. Cl. 494—1 39 Claims



1. A centrifuge of the type used to separate a generally flowable mixture of components having differing specific gravities on a continuous process, comprising:

separation chamber means rotatable generally about its axis for separating said mixture into generally flowing component layers;

means for rotating said separation chamber means about said axis to separate said mixture;

inlet means for communicating said separation chamber means with said mixture;

outlet means for individually communicating said components with generally segregated outflow paths; and

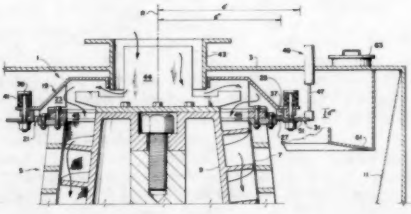
means operably associated with said separation chamber means and responsive to the rotational speed thereof for automatically purging said separation chamber means of component contaminant buildup.

4,397,638

SOLID BOWL CENTRIFUGE WITH INTERMITTENT RIM DISCHARGE

Peter C. Wilson, Dillon, Colo., and Eudore A. Berry, Longview, Wash., assignors to Fiberfuge Company, Denver, Colo.

Filed Dec. 11, 1981, Ser. No. 329,693
Int. Cl.³ B04B 1/10, 1/20
U.S. Cl. 494—40 31 Claims



1. A centrifuge comprising:

first and second members and means for mounting said first and second members for rotation about a common axis, each of said first and second members having a peripheral edge portion extending about said common rotational axis and extending outwardly of said common rotational axis for respective first and second distances, said mounting means mounting said first and second members with said peripheral edge portions thereof spaced from each other a third distance in a direction substantially parallel to said common rotational axis whereby a gap is formed between said peripheral edge portions,

a third member having at least a first substantially cylindrical

surface of a radius substantially the same as the smaller of said first and second distances and extending in a direction substantially perpendicular to said radius for a height at least as great as said third distance,

means for mounting said third member about said common rotational axis with said first substantially cylindrical surface substantially parallel to said common rotational axis and extending between the peripheral edge portions of said first and second members to substantially close the gap therebetween,

means for rotating said first, second, and third means at a substantially common angular velocity about said common rotational axis, and,

means for selectively moving said first cylindrical surface of said third member relative to said first and second members between a closed position extending between the peripheral edge portions of said first and second members and closing said gap and an open position opening said gap for the discharge of material therethrough.

4,397,639

DEVICE FOR THE INTERMITTENT PULSATORY APPLICATION OF FLUID MEDICAMENTS

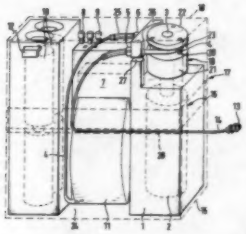
Wilhelm Eschweiler, Rammsee, and Gerhard Leyendecker, Bonn-Bad-Godesberg, both of Fed. Rep. of Germany, assignors to Ferring Arzneimittel GmbH, Kiel, Fed. Rep. of Germany

Filed Apr. 23, 1981, Ser. No. 256,725

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015777

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—153 **15 Claims**



1. A portable apparatus adapted to be worn by a patient user for the intermittent pulsatory application of fluid medicament comprising: a disposable reservoir and hose assembly including a flexible reservoir container for medicament, a hose communicating between the reservoir container and a hose pumping portion having its discharge end in fluid communication with a catheter; a roller-type pump means including a a head portion rotatable about an axis of rotation and having angularly spaced rollers adapted to act on said hose pumping portion; a D.C. motor for driving said pump means; control means for controlling said motor including a timer for pulse and pause times; battery means for supplying electrical energy to said motor, and an openable housing and a frame cooperating to enclose and mount the pump means, motor, control means, battery means, and reservoir and hose assembly with said catheter extending from said housing for delivery of the medicament to a patient; said housing and frame cooperating to provide a recess for receiving said reservoir container and a pair of hose mounts for removably mounting said reservoir and hose assembly; a collar fixed to each end of said hose pumping portion; each of said collars being adapted to be resiliently biased into engagement with an associated one of said hose mounts with said hose pumping portion extended elastically through said hose mounts and tensioned against said rollers; said hose pumping portion, hose mounts and rollers being visible and directly accessible upon opening of said openable housing to enable insertion and removal of said reservoir and hose assembly without further disassembly of said apparatus.

4,397,640

INSTRUMENT FOR IRRIGATION OF A SURGICAL SITE

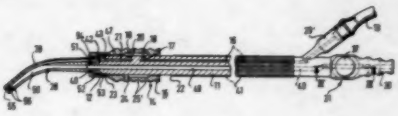
Erich Haug, and Siegbert Storz, both of Tuttlingen, Fed. Rep. of Germany, assignors to Uteh and Haug GmbH, Tuttlingen, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,437

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048064

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—33 **25 Claims**



1. A surgical irrigator comprising a stem having front and rear ends and a cylindrical portion with a cylindrical surface adjacent said front end; inlet means for an irrigation fluid at said rear end of said stem; passage means for guiding said irrigation fluid from said inlet means to said front end, a cannula for discharging said irrigation fluid from said front end of said stem, means for removably attaching said cannula to said front end of said stem; wherein said passage means comprises a first passage extending longitudinally through said stem from said inlet means towards said cylindrical portion; a first opening in said cylindrical surface; a first transverse bore extending from said first passage to said first opening; a second opening in said cylindrical surface spaced from said first opening; a second passage extending longitudinally through said stem to said front end; a second transverse bore extending from said second opening to said second passage; there being valve means for selectively closing or opening said passage means for the flow of said irrigation fluid therethrough, said valve means comprising a circumferentially extending sleeve displaceable longitudinally on said cylindrical portion, first and second abutments for limiting the range of axial displacement of said sleeve, said sleeve having an internal annular recess of a diameter greater than that of said cylindrical portion and an internal wall portion of substantially the same diameter as said cylindrical wall portion, said sleeve being arranged to permit transfer of said irrigation fluid from said first opening to said second opening via said annular recess when said sleeve is in contact with one of said abutments but to sealingly block one of said openings by said inner wall portion when in contact with the other of said abutments, thereby isolating said first and second openings one from the other, wherein said first abutment is defined by shoulder means of said stem on the side of said cylindrical portion adjacent said rear end and wherein said second abutment is defined by said means for removably attaching said cannula to said front end.

4,397,641

CATHETER SUPPORT DEVICE

Daimon C. Jacobs, 9493 E. 139th St., Bixby, Okla. 74008

Filed Apr. 3, 1981, Ser. No. 250,534

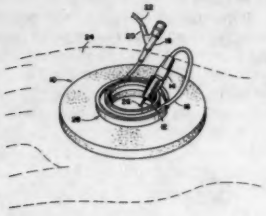
Int. Cl.³ A61M *25/02*

U.S. Cl. 604—180 **4 Claims**

1. A catheter support device for anchoring a catheter and a portion of its associated tubing to a patient and comprising

a substantially rigid support member having inner and outer surfaces and an aperture therethrough for surrounding only the portion of the patient wherein the catheter is to be inserted, means carried by said support member inner surface for attaching said support member to the patient, a catheter bracket carried by the outer surface of the support member and being in open communication with the

aperture therethrough for immobilizing the catheter with respect to the patient, an annular passageway provided in the outer surface of the support member surrounding the aperture for frictionally receiving a portion of the catheter associated tubing therein for substantially isolating said tubing portion with respect to the catheter, said support member comprising inner and outer circular spaced concentric outwardly extending wall members, the space therebetween being open between said wall members and forming said annular passageway, said catheter bracket being secured to said wall members, and wherein the outer wall member is provided with a pair of spaced openings therein to permit entry and exit of said portion of the catheter associated tubing.

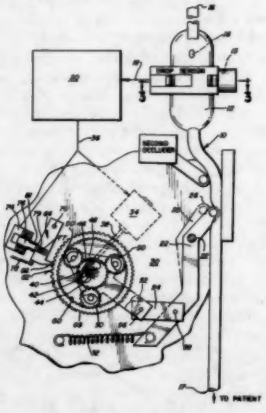


4,397,642

MOTOR DRIVEN OCCLUSION CONTROLLER FOR LIQUID INFUSION AND THE LIKE

Rene Lamadrid, Lake Forest, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 31, 1981, Ser. No. 336,154
Int. Cl.³ A61M 5/00
U.S. Cl. 604—245 **16 Claims**



1. In a solution administration system comprising a conduit proportioned for connection with a source of parenteral solution at one end for conveying said solution from said source to a patient, a drip chamber carried by said conduit, drop detector means for detecting drops falling through said drip chamber, flow control means including an occlusion device movable between a first position for compressing said conduit to occlude flow therethrough and a second position to permit flow through said conduit, and feedback means for controlling said flow control means to cause the rate of drops falling through the drip chamber as sensed by the drop detector means to correspond to a predetermined drop rate, wherein the improvement comprising, in combination:

said feedback means comprising a rotatable ring carrying teeth on at least one of its inner and outer peripheries, gear means rotatable in cooperation with the teeth of said periphery to rotate an arm member carried by said gear means, said arm member being connected to said occlusion device to move said occlusion device between open and closed positions as said gear means is rotated;

logic means, motor means controlled by the logic means and drivingly engaging said gear means; said logic means being responsive to said drop detector means to cause the motor means to rotate said gear means to control the rate of drops falling through the drip chamber;

retaining means normally preventing rotation of said ring; and

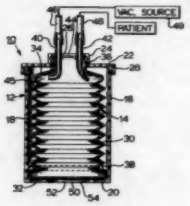
means for deactivating said retaining means at the occurrence of a predetermined circumstance, whereby said occlusion device is disengaged from the motor means and can be moved without corresponding action of the motor means.

4,397,643

DRAINAGE COLLECTION DEVICE WITH DISPOSABLE LINER

Sharon A. Rygiel, Miami, Fla., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed May 4, 1981, Ser. No. 259,886
Int. Cl.³ A61M 1/00
U.S. Cl. 604—317 **19 Claims**



1. A body fluid drainage collection device comprising a relatively rigid canister including a hollow container having a bottom wall and sidewalls connected to said bottom wall, and a lid connected to said sidewalls and having an opening therethrough, a flexible, collapsible drainage collection liner means removably insertable into said canister and having a lower portion with a bottom wall, sidewalls, and an upper portion with an upper wall integrally connected with said liner means bottom wall and sidewalls forming a drainage collection chamber, said liner means being collapsible to reduce the height thereof when free of said canister, suction outlet and drainage inlet conduits fixedly connected directly to said liner means upper wall and communicating with said chamber for communicating said chamber respectively with a source of vacuum and a source of body fluid drainage, both of said outlet and inlet conduits extending through said opening in said lid, and means connecting said liner means within said canister to maintain said liner means expanded during the application of vacuum to said outlet conduit including first connector means having securing abutment means on the walls of said opening of said lid, second connector means including a neck with abutment means on said upper wall of said liner means releaseably engageable with said abutment means on said walls of said opening of said first connector means to secure the upper portion of said liner to said lid, and holding means on said canister engageable with the lower portion of said liner means to circumferentially hold the lower portion in place, said sidewalls of said liner means being structured to prevent lateral collapse thereof without countervailing for the negative pres-

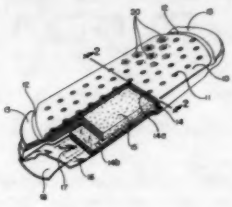
sure on the inside of the liner means when said outlet is connected with a source of vacuum.

4,397,644

SANITARY NAPKIN WITH IMPROVED COMFORT

Billie J. Matthews, Menasha; John P. Allison, Appleton; Paul S. Woon, Appleton; Robert A. Stevens, Appleton, and Stephan R. Bornslaeger, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 4, 1982, Ser. No. 345,888
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—378 **19 Claims**



1. A sanitary napkin with a perineal area generally corresponding to and positioned beneath the perineal area of the wearer in use comprising:

(a) a fluid permeable cover with a body contacting surface;

(b) an absorbent matrix system including a principal absorbent portion and a transfer portion including thermoplastic material;

(c) said transfer portion positioned between said cover and said principal absorbent portion and in fluid conductive contact between said cover and said principal absorbent portion and integrated at spaced apart sites with said cover, at least in the perineal area, to produce zones of greater density and enhanced fluid conduction relative to the remainder of said transfer portion; said zones corresponding to a transfer area on said cover, said transfer area being not less than 0.12% of said napkin perineal area; and

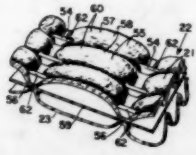
(d) a fluid impermeable baffle adjacent said absorbent matrix system having a garment facing surface and an absorbent-matrix-system-facing-surface.

4,397,645

DISPOSABLE ABSORBENT ARTICLE HAVING AN IMPROVED LIQUID CONTAINMENT CONSTRUCTION

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 24, 1981, Ser. No. 237,789
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—380 **5 Claims**



1. A disposable diaper comprising:

an outer covering layer;

an absorbent core means for absorbing liquids, said absorbent core means being encased in said outer covering layer;

a peripheral edge comprising a first longitudinal side edge and a second longitudinal side edge; and

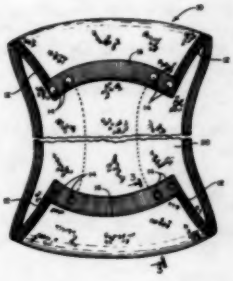
a multiplicity of leakage resistant members, one of said leakage resistant members being affixed at said first longitudinal side edge and one of said leakage resistant members being affixed at said second longitudinal side edge, said leakage resistant member comprising a fibrous facing sheet, a liquid impermeable backing sheet underlaying said facing sheet, and an elastic member interposed between said facing sheet and said backing sheet, said facing sheet having a compacted portion and an uncompacted portion, said compacted portion comprising a multiplicity of continuous bands which redirect liquid away from said peripheral edge from which leakage may occur, said elastic member being affixed to said compacted portion and being affixed to said backing sheet, said elastic member gathering said facing sheet when said elastic member is unrestrained, said uncompacted portion forming pillows when said facing sheet is gathered, said facing sheet having a wearer-contacting surface and said compacted portion being disposed below said wearer-contacting surface.

4,397,646

CONTOURED BABY DIAPER

Robert C. Daniels, and Florence S. Daniels, both of Piscataway, N.J., assignors to Blessings Corp., Middlesex, N.J.

Filed Mar. 24, 1981, Ser. No. 247,100
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—381 **5 Claims**



1. A cotton fitting diaper comprising flat superimposed layers including top and bottom edges, and concavely curved side edges extending along the mid region of the sides of the diaper to form the leg openings of the diaper when worn said layers including:

(a) a first inner layer of knit cotton material through which moisture may pass, disposed nearest the wearer;

(b) a second, soaker layer joined to said first layer, said second layer being constructed of water absorbent material and being sized smaller than said other layers, said second layer being joined to said first layer about its periphery and centered thereon forming a margin around said second layer free from contact with said second layer;

(c) a third barrier layer of water impervious material, joined to the periphery of said first layer to prevent liquid transfer from said second layer; and

(d) a fourth layer constructed of knit polyester forming the outer layer of said garment, said fourth layer being joined at the periphery to said first and third layers, said third layer preventing the wicking of liquid from said second layer to said fourth layer so that said fourth layer remains dry.

4,397,647

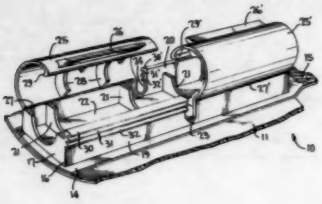
CATHETER STABILIZATION FITTING HAVING A SNAP-OVER COVER

Marvin Gordon, East Windsor, N.J., assignor to Whitman Medical Corporation, Clark, N.J.

Continuation-in-part of Ser. No. 168,721, Jul. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 5,032, Jan. 19, 1979, Pat. No. 4,224,937, which is a continuation-in-part of Ser. No. 905,399, May 12, 1978, abandoned. This application Mar. 2, 1982, Ser. No. 353,928

Int. Cl.³ A61M 5/00

U.S. Cl. 604—180 19 Claims



1. A stabilizing fitting for securing a catheter to a patient's skin comprising a laminar base member having an upper surface and a lower surface, pressure-sensitive adhesive means on at least a part of said lower surface of said base member, a catheter tube-retaining cradle secured to said upper surface of said base member, said cradle having a forward end, a rearward end, and resilient substantially parallel side walls, said side walls being spaced to receive a catheter tube placed longitudinally in said cradle, a tab grip extending beyond the periphery of said base member, a snap-over cover hinged to the upper edge of one of said side walls and including means for positively contacting said catheter tube and urging the catheter tube toward said lower surface, and latching engagement means on the other of said side walls for holding the cover in place in a flexibly removable engagement over a tube disposed in said cradle.

4,397,648

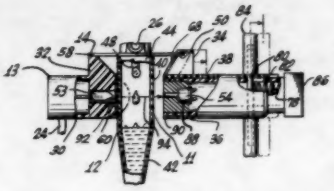
DROP SENSING UNIT AND ASSOCIATED DRIP CHAMBER FOR IV FLUID ADMINISTRATION

Wallace L. Knute, Del Mar, Calif., assignor to Ivac Corporation, San Diego, Calif.

Filed Nov. 7, 1980, Ser. No. 204,771

Int. Cl.³ A61M 5/16

U.S. Cl. 604—253 14 Claims



1. Apparatus for producing and monitoring drop flow, comprising:

a drop sensing unit;

an associated drip chamber having mounting means thereon;

first means on said drop sensing unit supportively and removably engaging said mounting means of said drip chamber and including alignment means automatically positioning said drip chamber relative to said drop sensing unit while simultaneously restraining said drop chamber against lateral or vertical movement relative to the vertical path of normal drop flow through the chamber, said first means and said mounting means cooperating to restrict said drop sensing unit to use with said associated drip chamber to provide accurate drop flow monitoring; and

second means on said drop sensing unit engaging said drip chamber at least at a location vertically spaced from said mounting means along said path, said second means cooperating with said supportively engaging first means to exert clamping forces on said drip chamber substantially normal to said path at no more than three regions of engagement.

4,397,649

WATER-SOLUBLE PHTHALOCYANINE SULFONYL CYANAMIDE COMPOUNDS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS DYESTUFFS

Hartmut Springer, Königstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

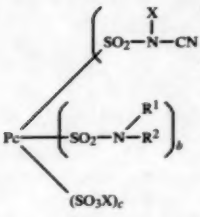
Continuation of Ser. No. 179,772, Aug. 20, 1980, abandoned. This application Aug. 26, 1981, Ser. No. 296,442

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934248

Int. Cl.³ C09B 47/26; D06P 1/14

U.S. Cl. 8—436 3 Claims

1. A water-soluble phthalocyanine compound of the formula (1)



wherein

Pc is the radical of the metal-free or a metal-complex phthalocyanine, said phthalocyanine radicals are unsubstituted or additionally substituted in the 3- and/or 4-positions of the carbocyclic aromatic rings of the phthalocyanine, and the sulfonyl-cyanamide, sulfonamide and sulfonic acid groups are bound in the 3- and/or 4-positions of the carbocylic aromatic rings of the phthalocyanines;

X is hydrogen, sodium, potassium or ammonium;

R^1 and R^2 each is hydrogen or lower alkyl unsubstituted or substituted or is an aryl radical,

R^1 and R^2 being identical or different from one another; or

R^1 and R^2 form together with the nitrogen atom and an alkylene of 3 to 8 C-atoms, or with another heteroatom and two lower alkylenes a heterocyclic ring;

a is an integer or fractional number from 1 to 4;

b is an integer or fractional number from zero to 3;

c is an integer or fractional number from zero to 3;

with a, b and c being identical or different from one another, but the sum of (a+b+c) is from 1 to 4, and the salts of these compounds.

4,397,650

TEXTILE DYEING PROCESS

Razmic S. Gregorian, Aiken, and Chettoor G. Namboodri, North Augusta, both of S.C., assignors to United Merchants & Manufacturers, Inc., New York, N.Y.

Continuation of Ser. No. 943,832, Sep. 19, 1978, abandoned. This application Jul. 28, 1981, Ser. No. 287,580

Int. Cl.³ D06P 5/00, 5/02, 3/52, 3/24

U.S. Cl. 8—477 22 Claims

1. A method of coloring textile materials, comprising the steps of:

(a) preparing a foamable composition comprised of a liquid and a foaming agent;

(b) foaming said composition to a blow ratio of from about 2:1 to about 20:1 to form a foam having a density in the range of from about 0.05 gm/cc to about 0.5 gm/cc;

(c) applying said foamed composition to a textile material; and

(d) collapsing said foamed composition in contact with the textile material,

wherein coloring material is added to said foamed composition of step (b) at a point in the method selected from: (1) prior to application of the foamed composition to the textile material; (2) during application of the foamed composition to the textile material; and (3) after application of the foamed composition to the textile material, the collapsing of the foamed composition, containing coloring material, causing penetration of the coloring material into the textile material.

4,397,651

POLYMERIC DYES DERIVED FROM BIS-REACTIVE METHYLENE COMPOUNDS AND AROMATIC DI-ALDEHYDES FOR PAPER

Hans-Juergen Degen, Lorsch, and Klaus Grychtol, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 217,747, Dec. 18, 1980, abandoned, which is a continuation of Ser. No. 125,905, Feb. 29, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,500

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908921

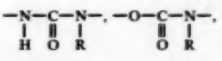
Int. Cl.³ C09B 23/10, 69/10

U.S. Cl. 8—506 2 Claims

1. A paper stock dyed with a polymeric dye of the formula I

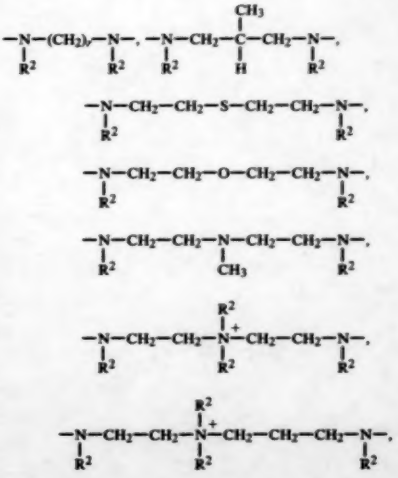
wherein,

B^1 is a bridge member selected from the group consisting of: lower alkylene, substituted lower alkylene, lower alkylene and substituted lower alkylene containing —NH—, —S—, —O—, carbamyl, carbonyloxy,



phenylene, substituted phenylene, napthylene, cycloalkylene, and heteroatom containing cycloalkylene radicals;

B^2 is a direct bond between dye molecule units or is a bridge member selected from the group consisting of:



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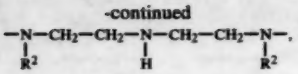

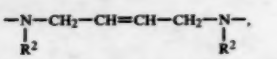

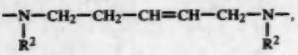

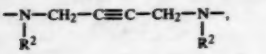

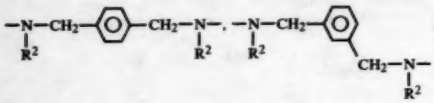

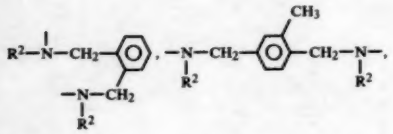

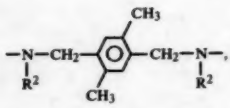

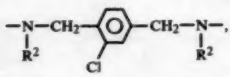

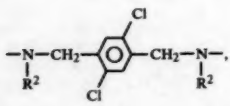

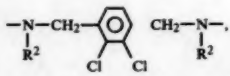

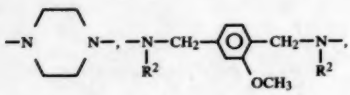

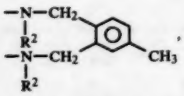

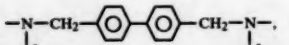

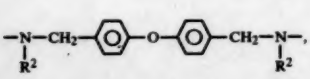

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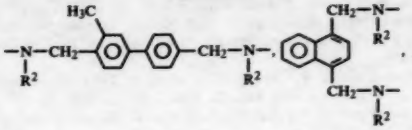
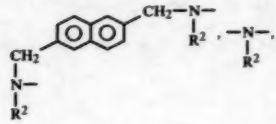
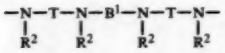






wherein R is lower alkylene, hydroxy-substituted lower alkylene, C_1–C_4 alkoxy, chloro, bromo or phenylene radicals; R^2 is hydrogen, lower alkyl, or substituted lower alkyl radical; B^1 is as already defined; and r is an integer from 1 to 6,

n is a number > 1,

p is the number of positive charges,

A^- is an anion,

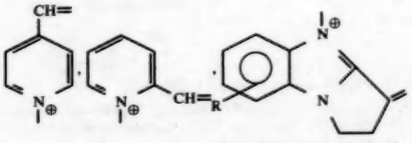
R is hydrogen, chloro, bromo, hydroxyl, C_1–C_8 alkyl, nitro, C_1–C_8 alkoxy, C_1–C_8 alkoxycarbonyl, cyano, hydroxycarbonyl, unsubstituted or substituted carbamyl or unsubstituted or substituted amino,

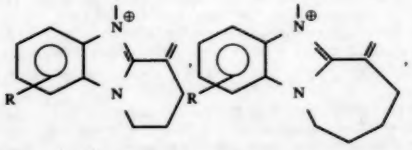
R^1 is hydrogen, chloro, hydroxyl, C_1–C_4 alkyl or C_1–C_4 alkoxy or,

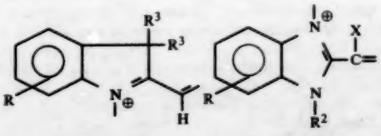
R and R^1 together are an unsubstituted or substituted fused ring, or R and R^1 together with B^2 are a heterocyclic radical,

T is a straight-chain or branched alkylene radical which is unsubstituted or substituted by hydroxyl, C_1–C_4 alkoxy, chlorine or bromine, or is a phenylene radical,

A is the radical of a methylene-active compound selected from the group consisting of:







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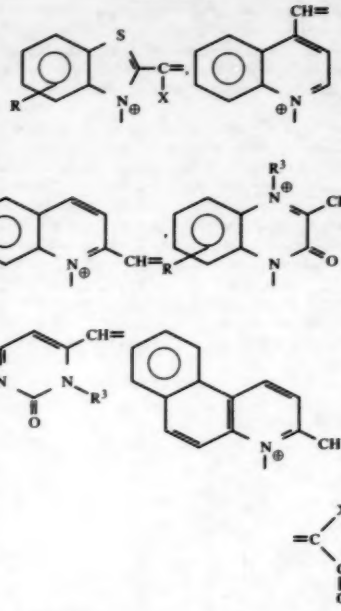


wherein R and R^2 are as already defined; R^3 is lower alkyl or substituted lower alkyl; X is hydrogen, cyano, C_1–C_8 carbamyl, C_1–C_4 alkyl, or a heterocyclic radical; M is an oxygen atom or an imino group, having the structure

and X and M may form a ring structure incorporating heteroatoms therein.

4,397,652

PROCESS FOR THE PRODUCTION OF NEGLIGIBLY DUSTY PREPARATIONS OF DYES AND OPTICAL BRIGHTENERS

Konrad Neumann, Wyhlen, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 25,312, Mar. 30, 1979, abandoned, which is a continuation of Ser. No. 858,032, Dec. 6, 1977, abandoned. This application Jan. 18, 1982, Ser. No. 340,176

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1976, 2656407

Int. Cl.³ C09B *67/00*; D06P *1/00*

U.S. Cl. 8—524 **15 Claims**

1. Process for the production of negligibly dusty pulverulent preparations of dyes, optical brighteners or mixtures thereof, which process comprises mixing an adhesive selected from the group consisting of sorbitol, hydrated dextrose, glucose, lactose, neopentyl glycol, mannitol, mannose and polyethylene glycol having a molecular weight of above 3000 and a dust-binding agent, selected from the group consisting of fatty acid ethanolamides, fatty acid amides, polyethylene glycols with a molecular weight of 200 to 1,000, condensation products from fatty acids, aliphatic alcohols, phenol or alkyl phenols with ethylene oxide, and copolymers of ethylene oxide and propylene oxide, into a preparation of dye, optical brightener or mixtures thereof.

4,397,653

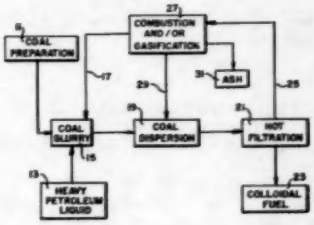
METHOD OF PRODUCING A COLLOIDAL FUEL FROM COAL AND A HEAVY PETROLEUM FRACTION

James R. Longanbach, Columbus, Ohio (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

Filed Nov. 13, 1981, Ser. No. 321,346

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **7 Claims**



1. A method of producing a liquid fuel or feed stock containing colloidal coal particles suspended in a petroleum fraction comprising:

comminuting coal to particles;

contacting said comminuted coal with a petroleum fraction having an atmospheric boiling point range of 300°–800° C. to form a slurry;

heating said slurry to a temperature of 400°–500° C. at a pressure of about 10–200 atmospheres and maintaining said slurry at this temperature for no more than 1 to 5 minutes;

cooling said slurry to a temperature of less than 300° C. after only 1 to 5 minutes contact time at 400°–500° C.;

filtering the liquid phase from the residual solids of said slurry;

processing said residual solids to provide hydrogen gas and heat;

recovering said liquid phase with suspended coal particles for use.

4,397,654

COPPER CATALYST FOR FUELS

Rien 'T Hart, Rotterdam-Botlek, Netherlands, assignor to XRG International, Inc., Stuart, Fla.

PCT No. PCT/US80/01530, § 371 Date Sep. 4, 1981, § 102(e) Date Sep. 4, 1981, PCT Pub. No. WO82/01717, PCT Pub. Date May 27, 1982

PCT Filed Nov. 17, 1980, Ser. No. 304,990

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—53 **9 Claims**

1. A fuel additive for jet, internal combustion, and diesel engines comprising an active ingredient formulation of a mixture of picric acid and cupric sulfate in a relationship of about 0.01 to 0.75–1.0 cupric sulfate to picric acid by weight percent in a mixed solvent of methanol, isopropyl alcohol, toluene, nitrobenzene, and a tertiary alkyl amine which is a cross of primary aliphatic amines of the general formula $R_1(R_2)(R_3)CNH_2$.

4,397,655

NOVEL PROCESS FOR PREPARING DIESEL FUEL

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed May 26, 1981, Ser. No. 267,199
Int. Cl.[3] C10L 1/18
U.S. Cl. 44—66 35 Claims

1. The method of stabilizing a composition containing an ethanol-miscible vegetable oil and a water-miscible alcohol which is miscible with said vegetable oil whereby said composition is inhibited from separating into more than one layer on contact with water which comprises mixing (i) said composition containing a vegetable oil and a water-miscible alcohol which is miscible with said vegetable oil, and (ii) as an additive, a ketal or an acetal or an orthoester thereby forming a stabilized composition of increased water-tolerance which remains a single phase mixture at pH below 7 in the presence of water; and

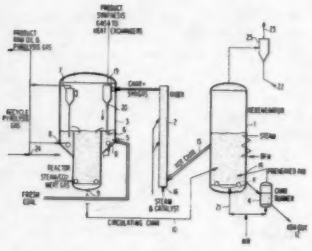
recovering said stabilized composition of increased water-tolerance.

4,397,656

PROCESS FOR THE COMBINED COKING AND GASIFICATION OF COAL

Anil B. Ketkar, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,568
Int. Cl.[3] C10J 3/00
U.S. Cl. 48—202 8 Claims



1. A continuous process for the combined devolatilization and gasification of coal comprising the steps of (a) heating devolatilized coal by partial combustion with air in a fluid bed to produce carbon-containing hot char, (b) circulating said hot char to a carbon in said hot char with steam to produce synthesis gas and thereafter separating said synthesis gas and said hot char, (d) rapidly mixing said separated hot char with fresh coal in a ratio of 1:1 or greater in a devolatilization fluid bed reactor to recover devolatilized coal, gas and volatiles, (e) separating ash and impurities from said recovered devolatilized coal by burning, and (f) recycling said purified devolatilized coal for heating to produce hot char.

4,397,657

GAS LOCK SYSTEM FOR CHARGING PARTICLES INTO A PRESSURIZED GASIFICATION REACTOR

Andrew Selep, Hales Corners, Wis., and Yeshwant K. Bhide, Allentown, Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

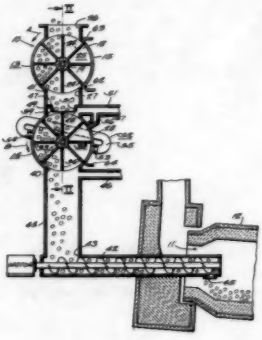
Filed Apr. 19, 1982, Ser. No. 369,811
Int. Cl.[3] C10J 3/30
U.S. Cl. 48—86 R 11 Claims

1. An apparatus for providing a continuous feed of particles of solid carbonaceous material from a source exposed to ambient oxygen containing atmosphere to a pressurized reactor which processes said material to a combustible product gas; comprising:

a. first and second rotary gas locks; each of said rotary gas locks having a housing with an inlet operable to receive a flow of said solid material and an outlet operable to discharge a flow of said material; means within said housing cooperating with said housing to define a plurality of material transferring compartments; said means being movably mounted for movement of said compartments alternately from said inlet to said outlet and back to said inlet;

b. said first and second rotary gas locks arranged in series relationship with said inlet of said first rotary gas lock arranged to receive a flow of said material from a source at ambient atmosphere; material conduit means for connecting said outlet of said first rotary gas lock with said inlet of said second rotary gas lock in gas-tight material flow communication; means for receiving material discharged from said outlet of said second rotary gas lock and introducing said material to said reactor;

c. means for supplying a flow of buffer gas containing essentially no free oxygen to said outlet of said second rotary gas lock at a pressure greater than the pressure within said reactor;



d. means connected to said first rotary gas lock housing adjacent said inlet for supplying a flow of nontoxic seal gas containing essentially no free oxygen to said inlet of said first rotary gas lock at a pressure greater than ambient atmospheric pressure;

e. means for exhausting said buffer gas from said inlet of said second rotary gas lock and exhausting said seal gas from said outlet of said first rotary gas lock, said means for exhausting comprising an exhaust gas conduit connected to and in gas flow communication with said material conduit

whereby said carbonaceous material is transferred from ambient oxygen containing atmosphere through said rotary gas locks by said compartments and into said pressurized reactor with said buffer gas flooding said second rotary gas lock and said seal gas maintaining a nontoxic and noncombustible atmosphere in said first rotary lock to maintain noncombustible mixtures of gases within both of said rotary gas locks and within said exhaust means.

4,397,658

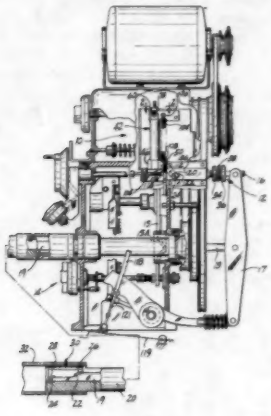
FEED CONTROL MEANS FOR HONING AND LIKE MACHINES

Frank E. Vanderwal, Jr., Frontenac, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Continuation of Ser. No. 81,623, Oct. 4, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,173
Int. Cl.[3] B24B 33/02
U.S. Cl. 51—72 R 12 Claims

1. Means to predeterminately control and limit the rate of advance of a working member against a workpiece, including

a workpiece having work surface thereon, a working member having a portion for engaging the work surface during operation thereon, and means to produce predetermined pressure by the working member against the work surface, the improvement comprising an hydraulic device having relatively movable first and second portions defining therebetween an expandable chamber for fluid, yieldable means urging the first and second portions to a predetermined inoperative condition, means to predeterminately meter escape of fluid from the chamber to control the force required to produce relative movement between the first and second portions, means pivotally anchoring said first relatively movable portion, means operatively connecting the second portion to the means for producing predetermined pressure by the working member against the work surface to restrain and limit the force that can be applied thereby and by the working member against the workpiece, said means operatively connecting the second



portion including relatively movable cam and cam follower members, one of which is connected to said second portion and the other being operatively connected to the means for producing pressure, and operator actuatable means operatively connected to the second relatively movable portion of the hydraulic device and to the cam member, actuation of the operator actuatable means moving the second relatively movable portion relative to the first relatively movable portion in opposition to the yieldable means urging them to their predetermined inoperative condition and simultaneously working the cam member relative to the cam follower member, restoration of the cam member under control of the yieldable means controlling movement of the working member into engagement with the workpiece and restricting application of restraining force produced by the hydraulic device against the means to produce pressure by the working member against the workpiece.

4,397,659

FLOWLINE DEGASER

William L. Gowan, P.O. Box J, Blooming Grove, Tex. 76626 and Charles K. Wadkins, 255 Barbee, Tyler, Tex. 75703

Filed Jun. 22, 1981, Ser. No. 276,009

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—41 **12 Claims**

1. A method for degasing drilling mud used in a drilling operation and exiting the bore hole in a bell nipple comprising the steps of:

directing drilling mud from the bell nipple through a flow line into a tank means through an inlet port therein;

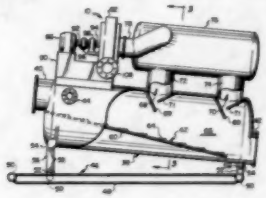
dispersing the mud flow over a downwardly inclined surface within said tank means to remove gas from the drilling mud and the mud flowing out of said tank means through an outlet port;

venting the removed gas from said tank means for disposal, the drilling mud flowing into said tank means and through said tank means by gravity flow; and

drawing the drilling mud from the flow line entering said tank means in the bell nipple with a vacuum within said tank means to prevent accumulation of gas in the area surrounding the bell nipple.

4. An apparatus for degasing drilling mud exiting from a bell nipple in a drilling operation comprising:

a tank having an inlet port proximate one end of said tank for connection to said bell nipple for flow of the drilling mud exiting the bell nipple into said tank and an outlet port proximate the opposite end of said tank for flow of the drilling mud from said tank;



structure within said tank defining a downwardly inclined surface from the inlet to outlet ports for dispersing and agitating drilling mud flowing through said tank to remove gas therefrom;

an upper expansion chamber positioned above said tank and communicating with the space in said tank above the inclined surface by vents to permit the gas from the tank to flow therein for disposal; and

at least one blower for drawing gas from said upper expansion chamber for disposal, the blower creating a vacuum within said upper expansion chamber and tank to drive gas from the drilling mud flowing through said tank, the vacuum being sufficient to draw gas from the drilling mud at the bell nipple to prevent accumulation of gas in the area surrounding the bell nipple.

4,397,660

PROCESS FOR THE REMOVAL OF H_2S AND CO_2 FROM A GAS MIXTURE

Hilde M. Van der Pas-Toornstra, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 12, 1982, Ser. No. 367,489

Claims priority, application United Kingdom, Jun. 15, 1981, 8118300

Int. Cl.³ B01D *53/14*

U.S. Cl. 55—48 **12 Claims**

1. A process for the removal of H_2S and CO_2 from a gaseous feed mixture and preparation of a gas with a H_2S concentration suitable to be used in a Claus process, which process comprises:

(a) countercurrently contacting said gaseous feed mixture at elevated pressure in a first absorption zone with a lean absorbent solution comprising the mixture of a tertiary amine, sulfolane and water, therein producing an unabsorbed portion and a first loaded absorbent solution;

(b) passing said first loaded absorbent solution to a flashing zone maintained at a pressure below the total partial pressure of the CO_2 and H_2S present in said first loaded absorbent solution at the temperature present in said flashing zone, therein effecting the liberation of a gaseous stream containing a portion of said CO_2 and H_2S present in said

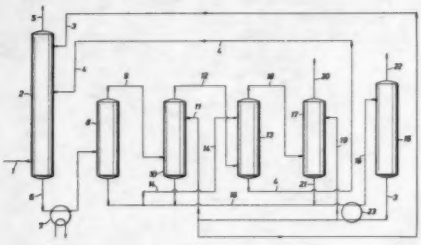
first loaded absorbent solution and producing a semi-loaded absorbent solution;

(c) countercurrently contacting said gaseous stream from step (b) with a lean absorbent solution comprising the mixture of a tertiary amine, sulfolane and water in a second absorption zone under conditions which are selective for H_2S removal, therein producing a CO_2-rich unabsorbed gaseous stream and a second loaded absorbent solution;

(d) passing a portion of said first loaded absorbent solution to a regeneration zone, therein regenerating said first loaded absorbent and producing a lean absorbent solution;

(e) passing said second loaded absorbent solution to a regeneration zone, therein regenerating said second loaded absorbent and producing a lean absorbent solution;

(f) stripping at least a portion of said semi-loaded absorbent



solution from step (b) with said CO_2-rich unabsorbed gaseous stream from step (c) in a stripping zone, therein producing a stripped gaseous stream and a stripped absorbent stream;

(g) passing said stripped absorbent stream to said first absorption zone at a point between where said gaseous feed mixture enters said first absorption zone and where said lean absorbent solution enters said first absorption zone;

(h) concurrently contacting said stripped gaseous stream from step (f) with a lean absorbent solution comprising the mixture of a tertiary amine, sulfolane and water in a third absorption zone under conditions which are selective for H_2S removal, therein producing an unabsorbed gaseous stream and a third loaded absorbent solution; and

(i) passing said third loaded absorbent solution to a regeneration zone, therein regenerating said third loaded absorbent and producing a lean absorbent solution.

4,397,661

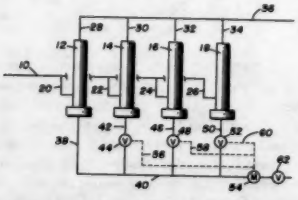
GAS PERMEATION APPARATUS HAVING PERMEATE RATE CONTROLLED VALVING

Duane E. King, Wake Forest, N.C., and John R. O'Brien, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 163,547, Jun. 27, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 324,881

Int. Cl.³ B01D *53/22*

U.S. Cl. 55—158 **7 Claims**



1. A permeator system for separating one gas from a mixture of said one gas and at least one other gas, comprising:

a. at least two permeators connected in parallel, said permeators each having a membrane more permeable to said one gas than said other gas such that said one gas is separated from the mixture in said at least two permeators;

b. an inlet line for feeding the mixture of gases to the permeator system;

c. an outlet line for withdrawal of permeated one gas;

d. each of said permeators having a first connecting line for feeding the gas mixture from the inlet line into each permeator to contact each membrane and a second connecting line for feeding said permeated one gas from each permeator to said outlet line;

e. at least one of said connecting lines of one permeator having a valve means therein for stopping the flow of permeated gas from said one permeator to said outlet line; and

f. a flow detector means connected in said outlet line, said flow detector means being connected to said valve means for actuating said valve means to lower the amount of effective membrane surface area in use when permeate flow rate in said outlet line falls below a predetermined rate and to increase the amount of effective membrane surface area in use when permeate flow rate rises above said predetermined rate, said surface area increases and decreases being effected by changing the number of permeators in use.

4,397,662

APPARATUS FOR REMOVING SOLVENTS FROM AIR

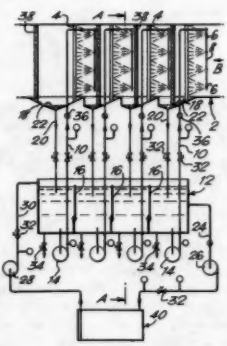
Ivan Bloomer, London, England, assignor to Schweitzer Industrial Corporation, Madison Heights, Mich.

Filed Jul. 27, 1981, Ser. No. 287,346

Claims priority, application United Kingdom, Jul. 30, 1980, 8024975

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—228 **14 Claims**



1. Apparatus for removing solvents from air comprising a passage through which solvent laden air is arranged to flow, a plurality of absorption liquid distributor members spaced within and along the passage in the direction of air flow, each said member extending across said passage and having an extended surface area, and a plurality of spray nozzles for an absorption liquid; at least one of said spray nozzles being arranged upstream of each said member in the direction of air flow to spray absorption liquid in the direction of air flow into the respective member such that films of absorption liquid are formed within said members in intimate contact with the air flow whereby the solvent is absorbed by the absorption liquid, sump means formed within the passage and beneath each member for collecting by gravity flow the absorption liquid and solvent solution from each said member, and means connected in liquid flow relation with the sump means for feeding at least a portion of the collected solution from each said member to the spray nozzles.

4,397,663

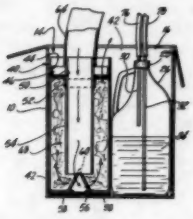
SELF-CONTAINED DISPOSABLE DEVELOPER/ABSORBER PACKAGE

Norman Michlin, Southfield, and Edward J. Thies, Warren, both of Mich., assignors to Universal Developer Corporation, Detroit, Mich.

Division of Ser. No. 172,105, Jul. 25, 1980, Pat. No. 4,334,756. This application Oct. 23, 1981, Ser. No. 314,283

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—387 5 Claims



1. An absorber canister for use in absorbing ammonia vapor from an air flow, comprising:

a hollow canister body having sidewalls and a bottom joined to said sidewalls;

a quantity of ammonia vapor absorbent material disposed within the interior of said canister body;

a flow tube extending substantially through the length of said canister body and having an opening in one end thereof within said canister body through which air may flow into said interior whereby air flow containing ammonia vapor passes through said flow tube, exits from said opening and passes through said absorbent material; and

means for mounting said flow tube within said canister body, said mounting means including-

(1) a V-shaped support having an apex engaging said one end of said flow tube and supporting said one end in spaced relationship to said bottom, and

(2) flap means secured to said support and overlying said bottom.

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DEVICE FOR SUPPLYING COOLING AIR UNDER PRESSURE

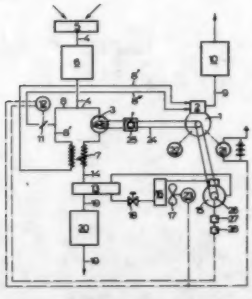
Pieter Kramers, Amersfoort, Netherlands, assignor to Bronswerk B.V., Netherlands

Filed Feb. 18, 1982, Ser. No. 349,904

Claims priority, application Netherlands, Feb. 23, 1981, 8100878

Int. Cl.³ F25B *39/04;* H05K *7/20*

U.S. Cl. 62—183 8 Claims



1. A device for supplying cooling air under pressure, e.g. for cooling the electric apparatus in an aeroplane at rest on the ground, comprising an internal combustion motor, such as a diesel motor; an air compressor having its suction line connected to the atmosphere, the pressure side of this air compressor supplying air under pressure; a cooling circuit for cooling this air under pressure, said cooling circuit including a compressor, a condenser and a cooler; a cooler with air-cooling which is operative between the air compressor and the said cooler in the cooling circuit; and actuating means, which reacts to the temperature of the atmosphere and which switches the compressor in the cooling circuit on and off when the temperature of the atmosphere rises or falls to a predetermined value.

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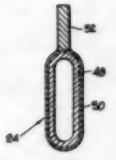
COOLING TUBES FOR GLASS FILAMENT PRODUCTION APPARATUS

Walter W. Harris, Toledo, Ohio, assignor to Manville Service Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 120,022, Feb. 11, 1980, Pat. No. 4,326,871. This application Jan. 18, 1982, Ser. No. 339,964

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—12 6 Claims



1. In an apparatus for forming glass filaments comprising the combination of: a chamber for the containment of molten glass, said chamber having a base, a plurality of small orifices in said base for discharging fine streams of molten glass from said chamber for attenuation into filaments; a plurality of cooling means positioned beneath and in proximity to said base, said cooling means being arranged to extend intermediate said orifices to cool glass filaments being drawn from said chamber, wherein said cooling means are each formed as a hollow tube from a base metal clad with a layer of noble metal; said base metal being selected from the group consisting of copper, and refractory metals including nickel, Inconel, molybdenum, and alloys of these materials, said hollow cooling tube having a wall thickness within the range of 0.010 to 0.040 inches; said noble metal being selected from the group consisting of platinum, palladium, rhodium, iridium, gold, silver, and their alloys, said noble metal cladding layer having a secondary wall thickness within the range from about 0.004 to 0.008 inches.

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METHOD OF PRODUCING GLASS FROM METAL ALKOXIDE SOLUTION

Michiharu Mishima; Yuji Yamamoto; Kensuke Makita, all of Matsuzaka; Sumio Sakka, Tsu, and Kanichi Kamiya, Mie, all of Japan, assignors to Central Glass Company Limited, Ube, Japan

Filed Oct. 27, 1981, Ser. No. 315,494

Claims priority, application Japan, Oct. 30, 1980, 55-151347

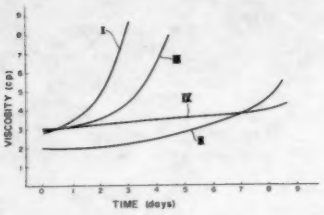
Int. Cl.³ C03B *19/06, 20/00*

U.S. Cl. 65—18.3 20 Claims

1. In a method of producing glass from a solution comprising a silicon alkoxide, water and a hydrophilic organic solvent, wherein the silicon alkoxide in the solution undergoes hydrolysis so that the viscosity of the solution gradually increases; the method comprising the steps of shaping the material of said solution into a desired form when said solution exhibits an appropriate viscosity for shaping wherein the gelled shaped solution material undergoes gelation, and heating the gelled

shaped solution to a temperature sufficient to convert the shaped solution into a glass of the desired form;

the improvement comprising the step of adding a water-soluble cellulose ether selected from the group consisting of hydroxypropyl cellulose, hydroxyethyl cellulose, hydroxypropylmethyl cellulose, methyl cellulose and ethyl cellulose to said solution as a viscosity increasing agent in



an amount effective to increase the viscosity of the solution to from 5 to 30 centipoises at room temperature, the increase in viscosity being effected substantially independently of the progress of said hydrolysis, wherein the shaping of the solution is performed when the viscosity reaches the viscosity for shaping without awaiting the progress of said hydrolysis to effect a shaping viscosity.

4,397,667

METHOD OF COLORING GLASS SHEET BY DIFFUSION AND REDUCTION OF SILVER IONS

Hiroshi Morimoto, Kyoto; Hajime Inoue, and Kazuo Ueda, both of Matsusaka, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Dec. 8, 1981, Ser. No. 328,630

Claims priority, application Japan, Dec. 9, 1980, 55-172636

Int. Cl.³ C03C *17/10, 21/00*

U.S. Cl. 65—30.13 **12 Claims**

1. A method of coloring a glass sheet which contains reducing ions, the method comprising the steps of:

applying a coloring agent which comprises a mixture of a finely powdered silver-containing oxide expressed by general formula $Ag_xW_yO_z$, wherein the ratio x:y is in the range from 1:1 to 2:1 and the ratio y:z is in the range from 1:2 to 1:4, and a transition metal oxide onto a major surface of the glass sheet, the weight ratio of said silver-containing oxide to said transition metal oxide being in the range from 1:5 to 1:20; and

heating the glass sheet applied with said coloring agent so as to cause silver contained in said coloring agent to ionize and diffuse into a surface layer of the glass sheet.

4,397,668

PROCESS AND DEVICES FOR HARDENING OF GLASSWARE BY ION EXCHANGE

Siegfried Schelinski, Weisswasser; Dieter Patzig, Schleife; Klaus Heinrich, and Bernd Grüger, both of Weisswasser, all of German Democratic Rep., assignors to VEB Wissenschaftlich-Technischer Betrieb Wirtschaftsglas Bad Muskau, Bad Muskau, German Democratic Rep.

Filed May 22, 1981, Ser. No. 266,259

Claims priority, application German Democratic Rep., Aug. 8, 1977, 200450

Int. Cl.³ C03B *27/02;* **C03C** *21/00*

U.S. Cl. 65—30.14 **35 Claims**

1. An apparatus for hardening glassware by ion exchange, comprising:

(A) a molten salt distributor at the top of said apparatus,

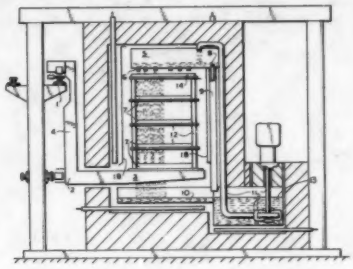
(B) a series of intermediate perforated salt distributors arranged at discrete intervals underneath said salt distributor (A), to evenly regulate the cascade of molten salt from said initial salt distributor (A),

(C) a device for passing said glassware between said intermediate distributors (B) to evenly rinse said glassware with said molten salt,

(D) a catch basin for said molten salt underneath said intermediate salt distributors, and

(E) means for recirculating said molten salt from said catch basin (D) to said salt distributor (A).

26. A process for hardening glassware by ion exchange, comprising the steps of:



(A) arranging said glassware in a plurality of levels on a means for conveying said glassware through a stream of molten salt,

(B) passing said glassware through a stream of molten salt, said stream of molten salt originating from jets disposed between 8 mm and 50 mm from each other, causing a rinse density between 5 ml/dm^2 and 500 ml/dm^2, and creating an unbroken salt film between 0.05 mm and 0.5 mm on the outer surface of said glassware, and

(C) recycling said molten salt.

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METHOD FOR THE PRECISION MOULDING OF GLASS ARTICLES, METHOD OF MANUFACTURING A MOULD, AND MOULD FOR THE PRECISION MOULDING OF GLASS ARTICLES

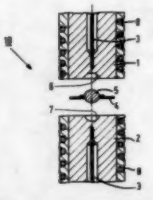
Jan Haisma; Johannes K. A. Boesten, and Henderikus deVroome, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 339,959

Claims priority, application Netherlands, Feb. 9, 1981, 8100602

Int. Cl.³ C03B *11/12, 27/02*

U.S. Cl. 65—30.14 **10 Claims**



1. A method for manufacturing a mould for precision moulding of glass articles comprising the steps of forming a glass preform capable of ion exchange, subjecting said preform to an etching treatment, treating the moulding surface of said preform by at least polishing, and prestressing and reinforcing said treated mould by a chemothermal ion exchange treatment, wherein said treatment includes treating said preform for a

number of hours in a bath of KNO_3 with 0.2 percent by weight of $Al_2(SO_4)_3$ at a temperature of approximately 500° or higher.

7. A mould for the precision moulding of glass articles comprising

a glass mould structure having

an edge zone with a penetration depth from the surface in the range of 100 to 200 μm,

said edge zone having a compressive stress profile which is positive at zero penetration depth at said surface, increases to a maximum value, then decreases to zero,

a core zone subject to a tensile stress, and

a stress-free zone between said edge zone and said core zone.

9. A method for precision moulding glass articles comprising the steps of

preparing a glass mould having a positive compressive stress at the surface, said compressive stress increasing to a maximum value and thereafter decreasing to zero, a core zone subject to a tensile stress, and a stress-free zone between said tensile stress and said compressive stress,

inserting a glass article into said glass mould,

heating said glass article to a moulding temperature in the vicinity of the American softening temperature of said glass article,

pressing said glass article in said glass mould at a pressure between 400 to 700 kPa to form a moulded glass article, and

removing said moulded glass article from said glass mould.

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METHOD OF MAKING ALKALI METAL, CALCIUM FLUOROSILICATE GLASS-CERAMIC ARTICLES

George H. Beall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 308,143, Oct. 5, 1981. This application Sep. 13, 1982, Ser. No. 416,961

Int. Cl.³ C03C *3/22, 3/04*

U.S. Cl. 65—33 **3 Claims**

1. A method for preparing a highly crystalline glass-ceramic article exhibiting high toughness and a modulus of rupture in excess of 20,000 psi, wherein the predominant crystal phase is canasite and/or agrellite and/or fedorite, which comprises the following steps:

(a) melting a batch for a glass consisting essentially, expressed in terms of weight percent on the oxide basis, of about

SiO_2	45–75
CaO	8–30
F	3.5–12
Na_2O	3–15
K_2O	0–20
$Na_2O + K_2O$	5–25
B_2O_3	0–6
Al_2O_3	0–7
ZrO_2	0–12

(b) simultaneously cooling the melt to a temperature at least below the transformation range thereof and shaping a glass article of a desired configuration therefrom; and

(c) exposing said glass article to a temperature between about 500°–1000° C. for a time sufficient to cause the growth therein of the desired crystals.

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METHOD OF PLACING A METAL OXIDE FILM ON A SURFACE OF A HEATED GLASS SUBSTRATE

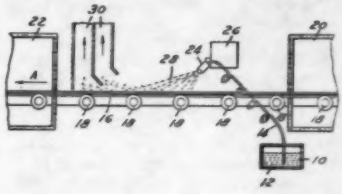
Sandy T. S. Vong, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01299, § 371 Date Sep. 20, 1982, § 102(e) Date Sep. 20, 1982

Continuation-in-part of Ser. No. 325,891, Nov. 30, 1981, abandoned. This PCT application Sep. 20, 1982, Ser. No. 434,642

Int. Cl.³ C03C *17/245*

U.S. Cl. 65—60.52 **5 Claims**



1. A method of placing a metal oxide film on a surface of a heated glass substrate which is being moved in a selected direction from a glass manufacturing process, the method comprising the steps of:

delivering a spray powder by means of a gaseous stream to a location spaced above said moving glass substrate, said glass substrate having a temperature in a range from 700° F. (370° C.) to 1200° F. (650° C.), said spray powder having individual particles with a size in a size range from 0.05 microns to 50 microns formed from organic based metal salts which are heat decomposable;

accelerating said spray powder from said location spaced above said moving glass substrate, said acceleration being accomplished by entraining said spray powder in a high velocity stream of air which causes individual particles of said spray powder both to be accelerated to velocities in a range of from 20 feet per second (6 meters per second) to 250 feet per second (76.2 meters per second) and to separate said individual particles of spray powder; and

directing said accelerated spray powder entrained in said high velocity stream of air in directions which fan outwardly, both downwardly toward said moving glass substrate and longitudinally along said selected direction of movement of said glass substrate whereby separated, individual particles of said spray powder are either rapidly brought to a location in juxtaposition to said surface of said glass substrate whereat said individual particles of said spray powder are vaporized, decomposed and reacted with oxygen to form a tightly adherent coating on said glass substrate, or are rapidly exhausted from said location in juxtaposition to said surface of said glass substrate because said individual particles fail to vaporize, decompose or react within an acceptable residence time required for forming a tightly adherent coating on said moving glass substrate.

4,397,672

GLASS SHEET TEMPERING UTILIZING HIGH DENSITY AIR QUENCHING

John S. Nitschke, 324 E. Second, Perrysburg, Ohio 43551

Filed Feb. 5, 1982, Ser. No. 346,421

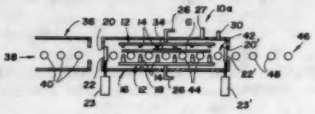
Int. Cl.³ C03B *27/04*

U.S. Cl. 65—114 **6 Claims**

1. A method for tempering a heated glass sheet comprising: impinging quenching air against the opposite surfaces of the

heated glass sheet while within an enclosed chamber maintained at superatmospheric pressure above about 10 pounds per square inch over atmospheric pressure.

6. In a glass sheet quench unit including opposed blastheads for impinging quenching air against a heated glass sheet positioned therebetween to temper the glass sheet, the improvement comprising: a blasthead enclosure defining an enclosed chamber which receives the blastheads and which is pressurized with superatmospheric pressure during the tempering; means for sensing and controlling the superatmospheric pressure within the chamber; and means for cooling and recirculating the pressurized quenching air for repeated impingement with the glass sheet.



4,397,673
COMPOSITE CONVEYING ROLL

Stephen Stevens, Crystal City, Mo., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 27, 1982, Ser. No. 343,049
Int. Cl.³ C03B *25/00*
U.S. Cl. 65—374.11 **10 Claims**

1. A conveyor roll for transporting material comprising:

a cylindrical, intermediate portion including an exterior surface portion wherein said exterior surface portion is formed of a material having a heat transfer coefficient and a circumference;

an end portion mounted on each end of said intermediate portion, said end portions including:

a body portion having perimeter less than said circumference; and

at least one thermally insulating disc mounted on said body portion wherein said disc is formed of a material having a heat transfer coefficient less than the heat transfer coefficient of said intermediate portion to provide a roll having heat transfer properties such that heat transfer between said intermediate portion and the material to be transported is greater than the heat transfer between said end portions and the material to be transported; and

means for securing said disc on its respective body portion.

4,397,674
MATERIAL TREATMENT AND WINDROWING APPARATUS

Edward E. Laughbaum, Crestline, Ohio, assignor to Bancohio National Bank, Columbus, Ohio

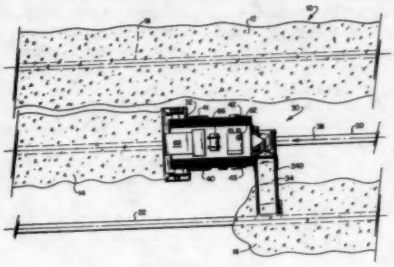
Filed Nov. 20, 1981, Ser. No. 323,179
Int. Cl.³ C05F *11/08*
U.S. Cl. 71—9 **42 Claims**

1. Windrowing apparatus for treating an elongate row of biodegradable material located upon a surface, comprising:

a chassis having wheel means, including front and rear wheels, for effecting the movement thereof along said surface;

elevator means mounted upon said chassis in the vicinity of said front wheels and including a plurality of elongate thrust components driveably rotatable about a forwardly disposed axis for contacting and thrusting said material engaged thereby substantially upwardly and rearwardly when said apparatus confronts said material;

collecting means mounted upon said chassis and positioned upwardly and rearwardly of said elevator means including a trough structure having an elongate first opening substantially coextensive with said elevator means, positioned for receiving said material elevated thereby, said trough structure having a second opening of substantially lesser extent than said first opening and configured to define a forward collection position, conveying means within said trough extending from the opposite ends thereof and actuable to move material received through said first opening into said second opening; and

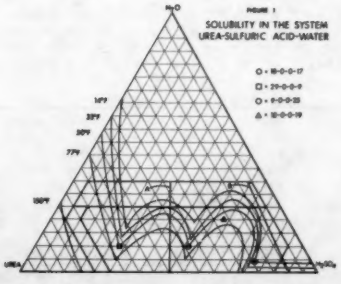


conveyance means supported upon said chassis for receiving said material at said forward collection position and including an elongate, row-forming conveyor having a receiving end pivotally coupled with said chassis for receiving said material conveyed thereto, said conveyor being selectively manipulatable to extend an end thereof upwardly and outwardly for receiving said material conveyed thereto with respect to said chassis for transferring said material over said end at a select elevated location so as to drop vertically to form another said row of biodegradable material.

4,397,675
METHOD OF PRODUCING UREA-SULFURIC ACID REACTION PRODUCTS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 5, 1981, Ser. No. 318,343
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **18 Claims**



1. A method for producing a concentrated urea-sulfuric acid reaction product of predetermined composition within the range of about 5 to about 75 weight percent urea, about 5 to

about 85 weight percent sulfuric acid, and about 0 to about 35 weight percent water, wherein at least a portion of said urea and sulfuric acid are present as a member selected from the group consisting of monourea sulfate, diurea sulfate, and combinations thereof, and the combination of said urea and sulfuric acid correspond to at least about 65 weight percent of said predetermined composition, which method includes the steps of (i) simultaneously and separately feeding to the reaction zone (a) at least about 10 weight percent based on the total feed to said reaction zone of a feed solution of a urea-sulfuric acid reaction product having a composition within said range and a urea/sulfuric acid weight ratio at least about 10 percent different from that of said predetermined composition, and (b) at least about 10 weight percent based on the total feed to said reaction zone of a reactant selected from the group consisting of urea, sulfuric acid, water and combinations thereof, at least one of said reactants being selected from urea, sulfuric acid and combinations thereof, in proportions and at feed rates correlated with the differences in the concentration of said urea, sulfuric acid and water between said feed solution and said predetermined composition sufficient to produce a total feed to said reaction zone having a composition corresponding to that of said predetermined composition, (ii) maintaining in said reaction zone a weight amount of said predetermined composition corresponding to at least about one-tenth of the hourly feed rate of said total feed to said reaction zone, (iii) agitating the reacting liquid phase formed by the addition of said total feed to said reaction zone during the addition of said total feed thereto at a rate sufficient to rapidly disperse said feed in said liquid phase, (iv) maintaining the temperature of said liquid phase within the range of about 120° F. to about 176° F. and below the incipient decomposition temperatures of both said predetermined composition and said feed solution, and (v) withdrawing said reaction product of said predetermined composition from said reaction zone.

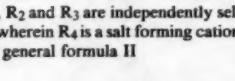
4,397,676

N-PHOSPHONOMETHYLGLYCINE DERIVATIVES

Izhak Bakel, Ramat Gan, Israel, assignor to Gesburi Laboratories Ltd., Tel-Mond, Israel

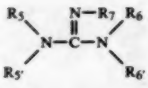
Filed Apr. 19, 1982, Ser. No. 369,425
Claims priority, application Israel, Mar. 8, 1982, 65187
Int. Cl.³ C07F *9/38*; A01N *57/20*
U.S. Cl. 71—86 **12 Claims**

1. N-Phosphonomethylglycine derivatives of the general formula I



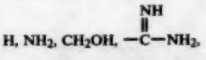
I

wherein R_1, R_2 and R_3 are independently selected from —OH and —OR_4 wherein R_4 is a salt forming cation iminourea derivative of the general formula II



II

wherein R_5, $R_{5'}$, R_6, $R_{6'}$ and R_7 are independently



or an aryl, cycloalkyl or straight or branched chain alkyl or alkenyl group optionally substituted by hydroxy or halogen, or an alkylaryl group, provided that

(a) at least one but no more than two of R_1, R_2 or R_3 are OR_4,

(b) no more than two R_5, $R_{5'}$, R_6, $R_{6'}$ are aryl or substituted aryl; and

(c) no more than one of R_5, $R_{5'}$, R_6, $R_{6'}$ and R_7 is CH_2OH.

12. A method of controlling vegetation comprising applying a phytotoxic amount of a compound as claimed in claim 1.

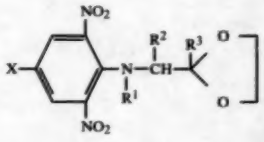
4,397,677

DIOXOLANE SUBSTITUTED 2,6-DINITROANILINES

Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 98,563, Nov. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 44,619, Jun. 1, 1979, abandoned. This application Nov. 6, 1980, Ser. No. 204,446
Int. Cl.³ A01N *43/00*
U.S. Cl. 71—88 **13 Claims**

1. A compound of the formula



wherein R^1 is alkyl; R^2 and R^3 are independently selected from the group consisting of hydrogen and alkyl; and X is selected from the group consisting of alkyl and haloalkyl.

13. A method of controlling weeds which comprises contacting said weeds with a herbicidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to weeds, a compound of claim 1.

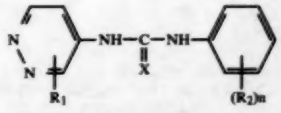
4,397,678

PLANT GROWTH REGULATORS

Toshihiko Okamoto, 1-7-19,, Shinoharakita, Kohokuku, Yokohamashi, Kanagawa; Yo Isogai, 1-1-2-609, Kamiyoga, Setagayaku, Tokyo; Koichi Shudo, 2000-10-2-116, Kosugayacho, Totsukaku, Yokohamashi, Kanagawa, all of Japan, and Soshiro Takahashi, Saitama, Japan, assignors to Toshihiko Okamoto, Kanagawa; Yo Isogai, Tokyo; Koichi Shudo, Kanagawa and Susumu Sato, Saitama, all of, Japan

Division of Ser. No. 154,664, May 30, 1980, Pat. No. 4,331,807. This application Jan. 27, 1982, Ser. No. 343,090
Claims priority, application Japan, May 31, 1979, 54-67872
Int. Cl.³ A01N *43/58*
U.S. Cl. 71—72 **4 Claims**

1. An agricultural composition useful as a plant growth regulator comprising as an active ingredient a compound of formula:



wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, a lower alkyl group, a halogen atom, a lower alkoxy group, an aryloxy group, a halomethyl group, a cyano group, an alkylthio group, a carboxy group or an alkoxycarbonyl group; X represents an oxygen atom or a sulfur atom; and n represents 1, 2 or 3; and when n is 2 or 3, R_1 and R_2 each may be different, in an effective plant-growth regulating amount, together with an inert carrier or diluent.

4,397,679

HERBICIDAL O-SULFAMYLMETHYLBENZENESULFONAMIDES

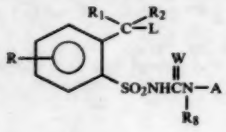
Richard F. Sauers, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,349, Jul. 11, 1980, abandoned. This application Apr. 27, 1981, Ser. No. 253,407

Int. Cl.³ A01N *9/22;* **C07D** *239/34, 239/42, 251/46*

U.S. Cl. 71—92 **22 Claims**

1. A compound of the formula:



wherein

L is $SO_2NR_3R_4$;

R is H, F, Cl, Br, NO_2, CF_3, C_1–C_3 alkyl or C_1–C_3 alkoxy;

R_1 is H or C_1–C_4 alkyl;

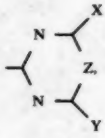
R_2 is H or CH_3;

R_3 is C_1–C_4 alkyl or OCH_3;

R_4 is C_1–C_4 alkyl;

R_8 is H, CH_3 or OCH_3;

A is



W is O or S;

X is H, Cl, Br, CH_3, CH_2CH_3, C_1–C_3 alkoxy, CF_3, SCH_3 or CH_2OCH_3;

Y is CH_3 or OCH_3;

Z is CH, CCl, CBr, CCN, CCH_3, CCH_2CH_3, CCH_2CH_2Cl or $CCH_2CH{=}CH_2$;

and their agriculturally suitable salts;

provided that:

(1) when R_3 is OCH_3, then R_4 is CH_3;

(2) the total number of carbon atoms of R_3 and R_4 is five or less; and

(3) when W is S, then R_8 is H.

17. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim **1**.

4,397,680

HERBICIDALLY ACTIVE OXIME ESTERS OF HALOGENATED α-[4-(PYRIDYL-2'-OXY)PHENOXY]-PROPIONIC ACIDS

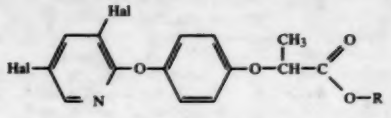
Beat Böhner; Hermann Rempfler, and Rolf Schurter, all of Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 2,923, Jan. 12, 1979, Pat. No. 4,300,944. This application Jul. 2, 1981, Ser. No. 279,506

Int. Cl.³ C07D *213/02;* **A01N** *43/40*

U.S. Cl. 71—094 **6 Claims**

1. A compound of the formula



wherein each Hal is chlorine or bromine; and R has the structure

of an oxime-ester in which (a) each unsatisfied bond of the carbon atom is connected to a C_1–C_4 alkyl group, (b) the two unsatisfied bonds of the carbon atom are connected to a single 5- or 6-membered saturated or unsaturated alicyclic nucleus which is unsubstituted or optionally substituted by methyl or chlorine, or (c) one unsatisfied bond of the carbon atom is connected to a phenyl group and the other is connected to a hydrogen atom, a methyl group or a cyano group.

4,397,681

FOLIAR ANTITRANSPIRANT

Werner R. Boehme, Glen Ellyn, Ill., assignor to Fats and Proteins Research Foundation, Inc., Des Plaines, Ill.

Filed Jun. 8, 1981, Ser. No. 271,526

Int. Cl.³ A01N *25/00*

U.S. Cl. 71—106 **11 Claims**

1. The method of reducing moisture loss from green plant tissues of agricultural field crops which comprises the step of coating plant leaf surfaces with an emulsion of animal fat material.

4,397,682

PROCESS FOR PREPARING METALS FROM THEIR FLUORINE-CONTAINING COMPOUNDS

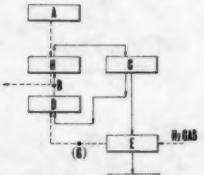
Morio Watanabe, Amagasaki; Sanji Nishimura, Kyoto, and Nobuatsu Watanabe, Nagaokakyo, all of Japan, assignors to Solex Research Corporation, Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 319,956

Claims priority, application Japan, Nov. 18, 1980, 55-161356

Int. Cl.³ B22F *9/26*

U.S. Cl. 75—0.5 A **2 Claims**



1. A process for preparing high purity metals of Mo, W, Zr, Nb, Cu, Zn, Co, Ni and In from fluorine-containing compounds comprising,

heating an ammonium fluoride of said metal in a hydrogen-containing stream.

4,397,683

DESULFURIZATION OF FLUID MATERIALS

D. Alan R. Kay, Burlington, Canada, and William G. Wilson, Pittsburgh, Pa., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 31,531, Apr. 19, 1979, Pat. No. 4,224,058, which is a division of Ser. No. 838,945, Oct. 3, 1977, Pat. No. 4,161,400, which is a continuation-in-part of Ser. No. 705,525, Jul. 15, 1976, Pat. No. 4,084,960, and a continuation-in-part of Ser. No. 838,888, Oct. 3, 1977, which is a continuation-in-part of Ser. No. 705,525, Jul. 15, 1976, Pat. No. 4,084,960. This application Jul. 31, 1980, Ser. No. 174,024

Int. Cl.³ C22C *33/08*

U.S. Cl. 75—58 24 Claims

1. A method for decreasing the concentration of reactive sulfur in a fluid material, comprising reacting at least a portion of the sulfur with a nonmetallic rare earth compound, at a sufficiently low oxygen potential to form one of the group consisting of rare earth sulfides, rare earth oxysulfides, and mixtures thereof.

4,397,684

PROCESS FOR PNEUMATIC STIRRING OF A BATH OF MOLTEN METAL

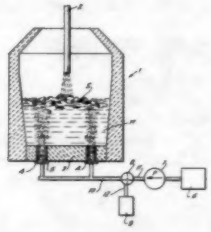
Jean-Claude Grosjean, Semecourt, France, assignor to Institut de Recherches de la Siderurgie Francaise Irsid, Saint-Germain-en-Laye, France

Filed Mar. 4, 1982, Ser. No. 354,912

Claims priority, application France, Mar. 11, 1981, 81 05017

Int. Cl.³ C21C *5/34, 7/10*

U.S. Cl. 75—59 6 Claims



1. A process for pneumatic stirring during at least a part of a refinement period of a bath of molten metal in a crucible comprising the steps of injecting a stirring fluid through elements of permeable refractory material wherein the stirring fluid injected through the elements consists of an organic liquid which vaporizes upon contact with the molten metal.

4,397,685

PRODUCTION OF ULTRA LOW CARBON STEEL BY THE BASIC OXYGEN PROCESS

Wayne J. Maddever, Pleasantville, N.Y.; Michael T. Burns, Middletown, Ohio, and Jennings B. Lewis, Putnam Valley, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 26, 1982, Ser. No. 362,050

Int. Cl.³ C21C *5/32, 5/34*

U.S. Cl. 75—60 8 Claims

1. In a process for the production of low alloy steel comprising decarburizing a ferrous melt contained in a vessel by injecting oxygen through a lance into the melt from above the surface of the melt, wherein the lance height between the lance tip and the melt surface when there is a lessening of the carbon monoxide evolved is from about 30 to 40 oxygen nozzle diameters, the improvement whereby low alloy steel having an ultra low carbon content is produced comprising the steps of:

(a) injecting an inert gas into the melt from above the surface of the melt at a flow rate of from about 40 to 110 percent of the oxygen lance rating when the carbon content of the melt is less than about 0.06 weight percent;

(b) adjusting the flow of oxygen through the lance to be from about 10 to 40 percent of the inert gas flow rate;

(c) lowering the lance height to between about 30 to 60 percent of the normal lance height; and

(d) continuing the injection of oxygen and inert gas into the melt until low alloy steel having the desired ultra low carbon content is produced.

4,397,686

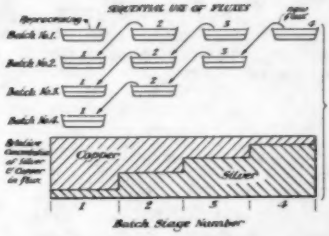
METHOD FOR REFINING PRECIOUS METALS

Louis T. Winkler, 1308 SE. 1st Ave., Deerfield Beach, Fla. 33441; John D. Goins, 2211 SW. 27 Ter., Miami, Fla. 33133; George R. St. Pierre, 3595 Olentangy Blvd., Columbus, Ohio 43214; Carroll E. Mobley, 2753 Cranford Rd., Columbus, Ohio 43221, and Craig B. Shumaker, 148 W. Dominion Blvd., Columbus, Ohio 43214

Filed Jan. 12, 1981, Ser. No. 224,163

Int. Cl.³ C22B *11/00*

U.S. Cl. 75—63 24 Claims



1. A method for removing base metals, other oxidizable impurities, and volatile impurities from precious metal-bearing metallic material including gold or silver thereby producing a precious metal of high purity comprising the steps of:

(a) heating the precious metal-bearing metallic material to a molten state;

(b) controlling the temperature of the molten material to maintain the molten material in a molten state;

(c) incorporating an oxidizing agent in said molten material in a concentration sufficient to provide an amount of oxygen in the molten material to oxidize said base metals and other oxidizable impurities contained therein;

(d) introducing flux onto said molten material to form a liquid flux layer on said molten material;

(e) maintaining the concentration of oxygen in said molten material at the flux-metal interface while said flux layer is in contact with said molten material;

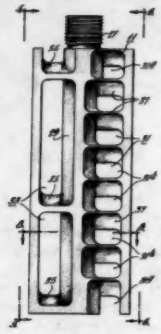
(f) establishing the molten metallic material and flux layer in a ratio sufficient to facilitate migration and absorption of said oxidized base metals and other oxidized impurities into said flux layer; and

(g) maintaining the concentration of base metal and other impurity oxide in the flux layer at a level sufficient to allow oxidized base metal and oxidized impurities to continuously migrate from the molten material to the flux layer throughout the refining method.

4,397,687
MIXING DEVICE AND METHOD FOR MIXING MOLTEN METALS

Richard Bye, Shorewood, Wis., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 21, 1982, Ser. No. 380,795
Int. Cl.³ C22B *21/06*
U.S. Cl. 75—68 R **8 Claims**

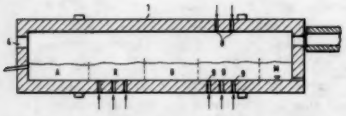


1. A mixing device to ensure thorough mixing of metals and metal alloys comprising a generally rectangular solid and a series of ports on each side of the axial center of said rectangular solid whose upper and lower limits are defined by oppositely opposed angularly directed fin portions wherein the fins on one side of said axial center are directed in one direction and the fins on the other side of said axial center are directed in the opposite direction and wherein a plurality of the ports on one side of said mixing device are off-center from the axial center and the total face area of the ports on the one side are essentially equal to the total face area of the ports on the other side.

4,397,688
CONTINUOUS PROCESS OF SMELTING METALLIC LEAD DIRECTLY FROM LEAD- AND SULFUR-CONTAINING MATERIALS

Werner Schwartz, Buchholz, and Peter Fischer, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,078
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 3029741
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—77 **3 Claims**



1. In a continuous process of smelting metallic lead directly from lead- and sulfur-containing materials in an elongated horizontal reactor, wherein a molten bath consisting of a slag phase and a lead phase is maintained in the reactor, the slag phase and the lead phase are countercurrently conducted through the reactor, the gas atmosphere is conducted countercurrently to the slag phase through the reactor, oxygen is blown into the molten bath from below at controlled rates in the oxidation zone, which is disposed on the side where the lead is tapped, lead- and sulfur-containing material is charged at controlled rates onto the molten bath, reducing agent is introduced into the molten bath in the reducing zone, which is disposed on the side where the slag is tapped, additional heat is supplied to the gas space in the reducing zone, such an oxidation potential is maintained in the oxidizing zone that the charge is smelted in a thermally self-sufficient process to form metallic lead and a slag which contains metallic lead and lead oxide, and the rate of the reducing agent and the temperature in the reducing zone are so controlled that a low-lead slag is formed, the improvement comprising maintaining the temperature of the molten bath in the reducing zone constant by a controlled supply of additional heat, and maintaining the temperature of the molten bath in the oxidizing zone constant by controlling the ratio of oxidizable sulfur to oxygen in such a manner that in case of a temperature rise the ratio of sulfur to oxygen is increased in order to decrease the lead oxide content of the slag and in case of a temperature drop the ratio of sulfur to oxygen is decreased in order to increase the lead oxide content of the slag and the increase and decrease of the ratio of sulfur to oxygen are controlled allowing for the fact that the heat content of the gases entering the oxidizing zone from the reducing zone is changed with the lead oxide content of the slag.

4,397,689
PROCESS FOR THE EXTRACTION OF PRECIOUS METALS FROM CONCENTRATES THEREOF

Richard K. Lea, Watford; Julian D. Edwards, Chalfont St. Peter, both of England, and D. Frederick Colton, Burlington, Canada, assignors to Inco Limited, London, England

Filed Sep. 1, 1981, Ser. No. 298,356
Claims priority, application United Kingdom, Sep. 5, 1980, 8028662
Int. Cl.³ C22B *3/00*; C01G *55/00, 5/00, 7/00*
U.S. Cl. 75—108 **6 Claims**

1. A process for leaching a concentrate containing precious metals, comprising the steps of leaching the concentrate with hydrochloric acid and chlorine at a temperature in the range from 60° to 105° C. to dissolve most of the gold, platinum and palladium present leaving a solid residue containing substantially all the other precious metals, separating and recovering silver from the process if the silver content of the concentrate is greater than about 10% (by weight) of the concentrate, separating the residue and treating it with an excess (on a weight for weight basis) of sodium peroxide at a temperature in the range from 550° to 650° C. to solubilise the ruthenium, slurrying the resulting solids in water, combining the precious metal values from the slurry with the liquor from the leaching step, releaching the resulting slurry with hydrochloric acid and chlorine at a temperature in the range from 60° to 105° C. and separating the leach liquor from the remaining solids.

4,397,690
PROCESS FOR RECOVERING GOLD

Clarence D. Vanderpool; Brice E. Martin, and Richard G. W. Gingerich, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 20, 1982, Ser. No. 420,458
Int. Cl.³ C22B *11/00*
U.S. Cl. 75—108 **8 Claims**

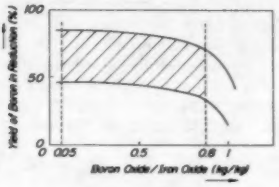
1. A process for recovery of gold from material including gold and molybdenum or tungsten comprising contacting said material with an aqueous solution consisting essentially of hydrogen iodide and iodine and water, said iodine being present at a desired concentration and an amount sufficient to solubilize a major portion of said gold and leaving molybdenum or tungsten said hydrogen iodide being present in an amount sufficient to provide for increased solubility of said iodine at said desired concentration.

4,397,691

METHOD FOR PRODUCING FE-B MOLTEN METAL

Takao Hamada; Nobuo Tsuchiya; Toshihiro Instani; Yoshiyasu Takada; Mitsuo Sumito, all of Chiba; Eiji Katayama; Toshimitsu Koitabashi, both of Ichihara; Kyoji Okabe, and Yo Ito, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 22, 1982, Ser. No. 401,001
Claims priority, application Japan, Oct. 30, 1981, 56-174960
Int. Cl.³ C21B 5/02, 13/02
U.S. Cl. 75—123 B 4 Claims



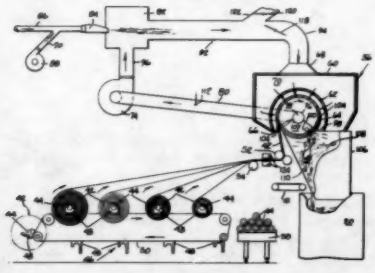
1. A method for producing ferro-boron which comprises introducing a reducing gas into a fluidizing furnace, the reducing gas being exhausted from a vertical furnace which is filled with a carbonaceous solid reducing agent and provided with a plurality of tuyeres at an upper stage and a lower stage, respectively, at the lower portion thereof, preliminarily reducing powdery iron ore in the fluidizing furnace with the exhausted reducing gas feeding the resulting preliminarily reduced iron ore together with hot air through the tuyeres at the upper stage into the vertical furnace, and feeding powdery boron oxide or boric acid in a weight ratio of boron oxide to iron oxide being 0.05–0.8 together with hot air through the tuyeres of the lower stage into the vertical furnace to subject the preliminarily reduced iron oxide ore and boron oxide or boric acid to reduction reaction.

4,397,692

METHOD FOR THE RECLAMATION OF GLASS FIBER FROM SCRAP FIBER GLASS MAT

Dennis L. Ramge, Perrysburg, Ohio, and John H. Miller, Littleton, Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed Mar. 12, 1982, Ser. No. 357,503
Int. Cl.³ C03C 23/00
U.S. Cl. 134—2 11 Claims



1. A method for reclaiming inorganic fibers from a continuous strip of non-woven fibers which contain a binding agent comprising the steps of:

conveying said strip through a heating zone;

supporting said strip along a predetermined path as said strip is being passed through said heating zone;

generating a heating oxygen containing gas;

conducting said heating gas to said heating zone;

drawing said heating gas through said strip to decompose said binding agent to form reclaimable fibers, said drawing of said gas occurring at a sufficiently rapid rate to remove exhaust gases and heat produced by said decomposition, thereby maintaining the temperature of the fibers below the fusion temperature thereof, said supporting step being continuously performed throughout the drawing step; and

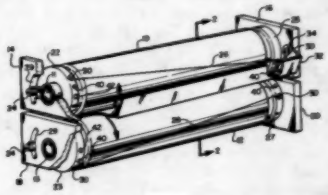
conveying said reclaimable fibers from said heating zone.

4,397,693

METHOD FOR CLEANING A COLD PRESSURE FUSING ROLLER

Walter J. Jurkowski, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 96,702, Nov. 21, 1979, Pat. No. 4,285,090. This application Jun. 15, 1981, Ser. No. 273,795
Int. Cl.³ B08B 1/00
U.S. Cl. 134—6 3 Claims



1. A method of removing electrostatic toner particles from the cylindrical surface of a cold pressure fusing roller, comprising continuously linearly contacting said cylindrical surface with a section of wire fixedly secured to the peripheral surfaces of a pair of discs flanking the ends of said roller and helically strung across said cylindrical surface wherein said discs have diameters less than the diameter of said roller.

4,397,694

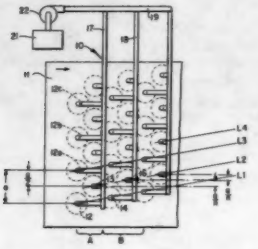
SPRAY NOZZLE ASSEMBLY FOR FILTER DEVICES

Rainer Maxelon, Raunheim, Fed. Rep. of Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,802
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952666
Int. Cl.³ B08B 3/02
U.S. Cl. 134—151 4 Claims

3. Spray apparatus for spraying washing liquid against a filter cake, including a supply conduit communicated with a source of said washing liquid for supplying spray nozzles with wash liquid, said spray nozzles being arranged about the filter cake in a plurality of double rows disposed normal to the direction of the filter cake movement, the spray nozzles of the individual rows of a double row being provided in staggered arrangement, and the spray nozzles of all rows having equal

distance one from the other, the improvement therein of said spraying nozzles of the double row being staggered in relation



to those of an adjacent double row in the direction transversely to the direction of filter cake movement.

4,397,695

METHOD FOR STABILIZING THE CURRENT GAIN OF NPN -SILICON TRANSISTORS

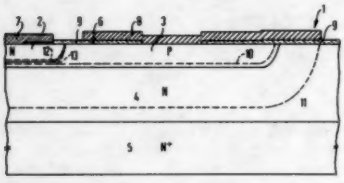
Manfred Arlt, Krailling, and Joachim Dathe, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,740

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021215

Int. Cl.³ H01L *7/54, 21/265*

U.S. Cl. 148—1.5 **13 Claims**



1. Method for stabilizing the current gain of NPN-silicon transistors after high-temperature processes necessary for manufacturing the transistors have been completed, comprising first annealing the transistors for at least 30 minutes at a temperature of 510° to 590° C. and then for at least 30 minutes at a temperature of 380° to 460° C.

4,397,696

METHOD FOR PRODUCING IMPROVED ALUMINUM CONDUCTOR FROM DIRECT CHILL CAST INGOT

Asuri K. Vasudevan, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,654

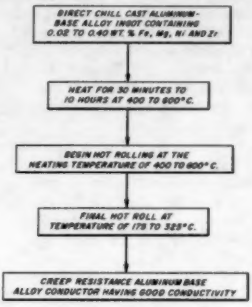
Int. Cl.³ C22F *1/04*

U.S. Cl. 148—11.5 A **11 Claims**

1. A method for the production of an aluminum conductor having improved creep resistance from an aluminum-base alloy ingot containing up to 0.40 wt.% of one of the group consisting of Fe, Mg, Ni, Cu, Si and Zr and not more than 0.9 wt.% when more than one of these elements are present and cast by the direct chill casting process which comprises:

(a) heating the aluminum-base alloy ingot to a temperature of from about 400° to 640° C. and maintaining the ingot at this temperature for from ½ to 10 hours;

(b) hot rolling the ingot at a first temperature of 400° to 600° C.; and


DIRECT CHILL CAST ALUMINUM-BASE ALLOY INGOT CONTAINING 0.02 TO 0.40 WT. % Fe, Mg, Ni AND Zr
HEAT FOR 30 MINUTES TO 10 HOURS AT 400 TO 600°C.
BEGIN HOT ROLLING AT THE HEATING TEMPERATURE OF 400 TO 600° C.
FINAL HOT ROLL AT TEMPERATURE OF 175 TO 325°C.
CREEP RESISTANCE ALUMINUM BASE ALLOY CONDUCTOR HAVING GOOD CONDUCTIVITY

(c) hot rolling the ingot at a second temperature of 175° to 325° C.

4,397,697

HOT STRIPS OR HEAVY PLATES FROM A DENITRATED STEEL AND METHOD FOR THEIR MANUFACTURE

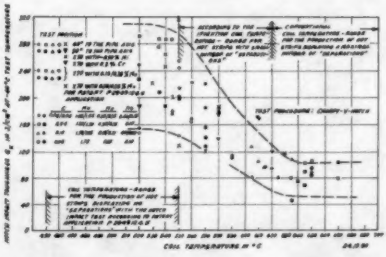
Klaus Freier, Wolfenbüttel; Constantin M. Vlad, Nordassel, and Klaus Hulka, Hohenassel, all of Fed. Rep. of Germany, assignors to Stahlwerke Peine-Salzgitter AG, Peine, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,675

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949124; Aug. 8, 1980, 3030060

Int. Cl.³ C21D *8/02*

U.S. Cl. 148—12 F **13 Claims**



1. In a method for the manufacture of hot strips or heavy plates from a denitrated steel composed of 0.04 to 0.16% carbon, 1.25 to 1.90% manganese, 0.2 to 0.55% silicon, 0.004 to 0.020% phosphorus, 0.002 to 0.015% sulfur, 0.02 to 0.08% aluminum, 0.02 to 0.08% niobium, the remainder iron and possibly contaminants, the improvement comprising the steps of having the hot strips or plates leaving the last finishing stand of rolls at a temperature of 750° C. to 820° C., cooling the hot strips or plates to an intermediate temperature of 450° C. to 500° C. at a cooling rate of 2° to 10° C./s and then slowly cooling the hot strips or plates in air to room temperature in a coil or in a pile.

4,397,698

METHOD OF MAKING AS-HOT-ROLLED PLATE

Anthony T. Davenport, Shaker Heights; David W. Dickinson, Hinkley, and Daniel R. DiMicco, Stow, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 91,770, Nov. 6, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 302,228

Int. Cl.³ C21D *8/02*

U.S. Cl. 148—12 F 2 Claims

1. A process of making as-hot-rolled steel plate characterized in the hot-rolled condition by a precipitation hardened ferrite-pearlite microstructure, a minimum yield strength of 80 ksi, at least 15 foot-pound Charpy V-notch at a temperature of −30° C., in both longitudinal and transverse sections up to $\frac{1}{2}$ inch in thickness, high formability and good weldability comprising the steps of providing a killed steel consisting essentially in percent by weight of 0.20–0.26 carbon, 1.0–1.7 manganese, up to about 1.5 silicon, up to about 0.04 phosphorous, up to about 0.02 sulfur, 0.08–0.20 vanadium, 0.01–0.09 Al, and at least one of from 0.01 to 0.025 nitrogen and from 0.01 to 0.10 columbium, and the balance iron, heating to a temperature at which sufficient vanadium is dissolved to obtain precipitation hardening with a minimum yield strength of 80 ksi, hot rolling the steel from said temperature to provide at least a 30% reduction in thickness below about 950° C. with no substantial rolling below the Ar_3 temperature and cooling the steel at a rate no faster than air cooling.

4,397,699

PROCESS FOR PRODUCING DEEP-DRAWING COLD ROLLED STEEL STRIP BY CONTINUOUS ANNEALING

Nobuyuki Takahashi, and Yoshikuni Furuno, both of Kitakyusyu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 152,984, May 27, 1980, abandoned. This application Oct. 15, 1981, Ser. No. 311,651

Int. Cl.³ C21D *8/04*

U.S. Cl. 148—12 C 4 Claims

1. A process for consistently producing a deep-drawing cold rolled steel strip by continuous annealing, said process comprising the successive steps of:

(1) hot rolling a steel containing:
not more than 0.06% C,
0.12 to 0.40% Mn,
0.005 to 0.05% acid soluble Al,
not more than 0.0040% N,
0.0005% to 0.0019% B
wherein the ratio of B to N is in the range of from 0.56 to 0.90
balance iron and unavoidable impurities;

(2) coiling the hot rolled steel strip from step (1) at a temperature not greater than 680° C.,
thereby precipitating BN by reaction between the boron and nitrogen thereby preventing precipitation of boron carbides;

(3) cold rolling the coiled roll of step (2); and thereafter

(4) continuously annealing the cold rolled strip of step (3)
thereby developing large crystal grains in the steel, providing a high r value not lower than 1.9, a substantial elongation value and a low yield point value to the resulting cold rolled steep strip.

4,397,700

PIPERAZINE DERIVATIVES OF FERROCENE

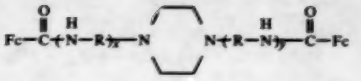
Nancy C. Johnson, Waldorf; Carl Gotzmer, Accokeek, and Mark Graff, Crofton, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1982, Ser. No. 351,711

Int. Cl.³ C06B *45/34*

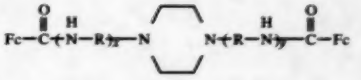
U.S. Cl. 149—7 9 Claims

1. A diferrocenyl piperazine represented by the formula:



where Fc represents a ferrocene radical, R represents an alkylene radical, and x and y are 0 or 1.

7. Ammonium perchlorate coated with a diferrocenyl piperazine represented by the formula:



where Fc represents a ferrocene radical, R represents an alkylene radical having from 1 to 7 carbon atoms, and x and y are 0 or 1 wherein said piperazine is complexed with ammonium perchlorate.

4,397,701

METHOD OF MAKING MASKS

Sander K. Johnson, Topanga; Tim Murphy, Canoga Park; Dean Hensley, Los angeles, and Ronald Sallon, Agoura, all of Calif., assignors to International Mask Research Foundation, Santa Monica, Calif.

Filed Feb. 20, 1981, Ser. No. 236,529

Int. Cl.³ B32B *31/22, 33/00*

U.S. Cl. 156—62 15 Claims

1. Method of making a mask which comprises molding a sculptable material, affixing said molded material on a facial form to the desired contours of said mask which are different than the contours of said form, applying wetted strips of plaster-impregnated gauze to said molded material, drying said wetted gauze to form a completed mask, and removing the said form from said mask.

4,397,702

FABRICATION OF NON-CONDUCTIVE CHARGED SENSING PROBE UNIT

Carl F. Klein, New Berlin; Stuart R. Buchanan, Mequon; Paul E. Thoma, Burlington, and David L. Klimek, Milwaukee, all of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.

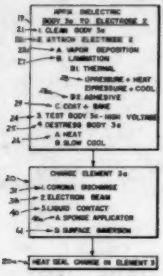
Continuation-in-part of Ser. No. 110,635, Jan. 9, 1980, abandoned. This application Jan. 21, 1982, Ser. No. 341,320

Int. Cl.³ B05D *5/12*

U.S. Cl. 156—153 41 Claims

1. The method of fabricating a non-conductive, gas sensing probe unit having an electrically non-conductive outer charged polymeric dielectric layer defining an exposed sensing surface and said charged dielectric layer having a permanent

electric charge and being intimately bonded to a compensating conductive electrode, comprising at least the three separate steps of prefabricating a solid dielectric body having a bulk resistivity of at least 1×10^{12} ohm cm at 50% RH and a surface resistivity of at least 1×10^{10} ohms/square at 50% RH, thereafter thermal destressing of said prefabricated solid dielectric body, said thermal destressing including heating of said prefabricated solid dielectric body and then slowly cooling of said prefabricated solid dielectric body at a rate which avoids stress



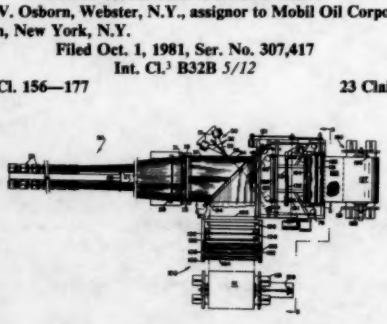
and strain deformation in the solid dielectric body to produce an essentially charge free dielectric body free of stress and strain, thereafter charging the destressed and charge free dielectric body subsequent to said destressing step to create a permanent electric charge in said body which creates a high intensity electric field at the exposed sensing surface, and including the step of bonding a compensating conductive electrode to the dielectric body without change in the permanent charge of said destressing dielectric body to form a dielectric-electrode electret subassembly.

4,397,703

METHOD AND APPARATUS FOR MANUFACTURE OF LAMINATED REINFORCED FILM

Paul V. Osborn, Webster, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 1, 1981, Ser. No. 307,417
Int. Cl.³ B32B *5/12*
U.S. Cl. 156—177 **23 Claims**



1. A continuous method for manufacturing a fiber-reinforced composite sheet material having continuous high strength properties and light weight, comprising:

A. continuously drawing a plurality of MD fibers from a supply thereof;

B. passing said MD fibers in longitudinally forward movement through a comb and forming a first planar lap of parallel, longitudinally aligned strands;

C. drawing a single TD fiber from a supply thereof at a high linear velocity;

D. passing said single TD fiber between spindles within an interweaving section of a pair of endless, spindle-equipped chains which cooperatively comprise said interweaving section, a diverging section, and a parallel section, said pair of chains revolving in opposite directions in a pair of planar patterns which are parallel to said first planar lap to form a pair of inward sides moving forwardly in mutually facing relationship and a pair of outward sides moving rearwardly;

E. engaging said single TD fiber around said successively interweaving spindles to form a successive plurality of closely spaced loops when each said spindle of one said chain pulls said TD fiber toward and beyond the previously passing spindle of the other said chain;

F. laterally extending said single fiber, by longitudinal movement of said inward sides through said diverging section, to separate said plurality of loops and form a plurality of closely spaced TD fibers which are transversely disposed to said longitudinally aligned MD fibers and connected by said plurality of loops;

G. continuing to move said transversely disposed TD fibers through said parallel section of said pair of chains;

H. drawing a pair of films from a supply thereof;

I. forwardly passing said pair of films in straddling and parallel relationship to said plurality of longitudinally extending fibers and said plurality of transversely disposed loops;

J. withdrawing said spindles from said loops; and

K. laminating said longitudinally extending fibers, said transversely disposed loops, and said pair of films to form said composite sheet.

18. An apparatus for manufacturing a fiber-reinforced film sheet, comprising:

A. a machine-direction multi-fiber feeding assembly;

B. a transverse-direction single-fiber feeding assembly;

C. a chain system for forming said single fiber into a plurality of transverse-direction reaches which are connected by loops at the ends thereof and move sidewise in the machine direction at the same speed as said machine-direction fibers;

D. a film feeding assembly for a pair of co-extruded films of indeterminate length;

E. a converging assembly for said machine-direction and transverse-direction fibers and said pair of films to form a fiber/film sandwich;

F. a high-temperature nip roll system for laminating said fiber/film sandwich together to form said fiber-reinforced film sheet; and

G. a winder for winding said laminated fiber-reinforced film sheet into a roll;

H. a pair of expander rolls for smoothing and widening said pair of films in the transverse direction, prior to reaching said converging assembly; and

I. an edge sealing assembly for heat sealing said pair of co-extruded films to said transverse direction reaches within a strip which is disposed close to said loops at each edge but inwardly of said loops, whereby said fiber/film sandwich is conjoined within said two strips.

4,397,704

METHOD AND APPARATUS FOR APPLYING DISCRETE LENGTHS OF ELASTIC STRIP MATERIAL TO A CONTINUOUSLY MOVING WEB

Richard H. Frick, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 20, 1980, Ser. No. 198,778
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—201 **14 Claims**

1. Apparatus for applying discrete lengths of elastic strip material to predetermined longitudinal areas of a continuously moving web comprising, in combination:

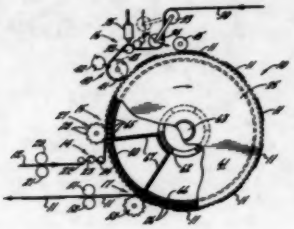
a substantially cylindrical drum having a multiplicity of substantially uniform parallel grooves, extending longitudinally and formed in the surface of said drum, and means for rotating said drum,

means for feeding said web to said rotating drum at a predetermined rate and for pressing said web into said grooves so as to corrugate said web,

means for supplying a continuous strip of adhesively coated elastic material for application to said web on said drum,

means for severing said adhesively coated elastic material into discrete lengths before transferring said discrete lengths to predetermined areas of web on said drum in timed relation to the rotation of said drum,

means for bonding said discrete lengths of elastic to said web



on said drum with said adhesive interposed between said elastic lengths and said web, and

means for removing said web and attached discrete lengths of elastic from said drum and pulling out said corrugations pressed into said web so as to stretch said discrete length of elastic bonded to said web and to return said web in areas between successive ones of said discrete lengths of elastic to a substantially flat uncorrugated condition.

4,397,705

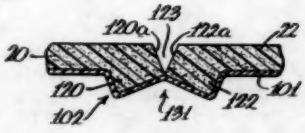
METHOD OF MAKING MULTIPLANAR DEVICES OF SHEET PLASTIC

Ronald P. Eckert, Northbrook, Ill., assignor to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Division of Ser. No. 180,097, Aug. 21, 1980, Pat. No. 4,352,843. This application Feb. 25, 1982, Ser. No. 352,387

Int. Cl.³ B29C *11/00*

U.S. Cl. 156—242 **4 Claims**



1. A method of making a component for a multiplanar device having effectively planar, angularly related rigid molded plastic walls, said method comprising the successive steps of:

molding a plastic intermediate piece which has two rigid walls having major areas of uniform thickness in a single plane, narrow strips of substantially greater thickness along adjacent end portions of said walls, and a V-notch between said strips of greater thickness and, simultaneously with said molding, bonding a continuous thin film of flexible plastic material to substantially the entirety of one surface of said walls to provide a hinge at the apex of the V-notch;

and thereafter applying an adhesive to the sides of said V-notch and bending said intermediate piece along said V-notch to bring the surfaces of said notch into contact and adhere them to one another, thereby forming a component which has two walls connected by a miter joint.

4,397,706

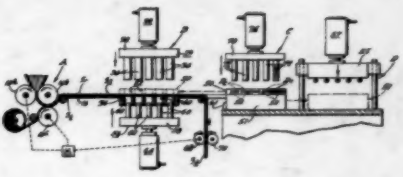
METHOD FOR MAKING MOLDED ARTICLES

Roland M. Allen, Kenilworth, and Andrew J. Kalocai, Pottstown, both of Pa., assignors to The West Company, Phoenixville, Pa.

Continuation of Ser. No. 156,752, Jun. 5, 1980, abandoned, which is a continuation of Ser. No. 934,712, Aug. 21, 1978, abandoned, which is a continuation of Ser. No. 742,746, Nov. 18, 1976, abandoned, which is a division of Ser. No. 473,216, May 24, 1974, abandoned. This application Mar. 22, 1982, Ser. No. 360,568

Int. Cl.³ B29C *7/00*; B29H *3/00*; B32B *25/00*

U.S. Cl. 156—242 **13 Claims**



1. A method for making articles comprised of a body portion of an elastomeric material and a liner of an inert material covering at least a portion of the peripheral surface of the body portion consisting of the steps of bonding a layer of elastomeric to one face of a layer of the inert material, forming at least one clad element of a predetermined configuration, positioning the clad element in a mold cavity with the layer of inert material contacting at least a portion of the surface of a mold cavity, adding additional amounts of uncured elastomeric material to the mold cavity and curing the elastomeric materials.

4,397,707

COMPOSITIONS AND METHODS FOR IMPROVING ADHESION TO PLASTIC SUBSTRATES

Terrance H. Dawdy, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jan. 20, 1982, Ser. No. 340,912

Int. Cl.³ C09J *5/02*

U.S. Cl. 156—307.5 **10 Claims**

1. A method for bonding polyester-based plastic materials comprising:

(a) treating said polyester-based plastic material with a primer composition comprising at least one aromatic polyisocyanate compound, at least one amino resin and at least one acidic urethanation catalyst;

(b) exposing such treated polyester-based plastic material to ambient conditions of temperature and humidity for a time sufficient to at least partially moisture-cure said aromatic polyisocyanate compound to form a urethane compound having sufficient —NH— groups for subsequent reaction with functional groups of said amino resin;

(c) applying to such treated polyester-based plastic material a room temperature-curable adhesive composition comprising ethylenically unsaturated compound having a single vinyl group;

(d) contacting such adhesive-coated treated polyester-based plastic material with a second polyester-based plastic material, said second plastic material having been treated with said primer composition;

(e) exposing the resulting assembly at room temperature for a time to at least initiate curing of said adhesive; and

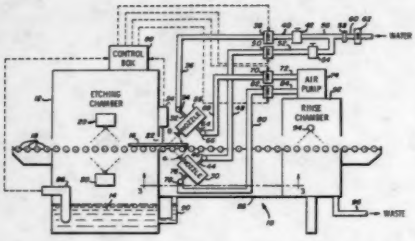
(f) baking the assembly at a temperature in the range from 100° to 150° C. to react functional groups of said amino resin with said —NH— groups of said urethane compound and complete cure of said primer composition.

4,397,708

ETCHING AND ETCHANT REMOVAL APPARATUS

John J. Frantzen, San Jose, Calif., assignor to Koltron Corporation, Sunnyvale, Calif.

Filed Sep. 25, 1980, Ser. No. 190,875
Int. Cl.[3] C23F 1/02
U.S. Cl. 156—345 5 Claims



1. An etching and etchant removal apparatus for removing liquid etchant from a work piece comprising:

an etching chamber including means for transporting a work piece therethrough along a work piece travel path and subjecting said work piece to an etchant solution within the chamber;

first nozzle means including a mixing chamber and a spray spout located adjacent to the etching chamber near an exit portal of the etching chamber and adjacent to said work piece travel path, the first nozzle means being positioned with said spray spout oriented to direct a spray along a pattern intersecting said travel path at an acute angle;

means for joining a liquid solution source to said mixing chamber of the first nozzle means;

means for joining a gas source to said mixing chamber of the first nozzle means simultaneously with said liquid solution to provide a liquid spray from said spray spout;

a collecting tank located near the first nozzle means and adjacent to the etching chamber near said exit portal for receiving etchant solution removed from said work piece;

recycling means connected to the collecting tank and to the etching chamber for returning etchant removed from said work piece to the etching chamber;

first control valve means connected to the first nozzle means, the first control valve means including a movable element for controling passage of liquid to said mixing chamber of the first and second nozzle means;

second control valve means connected to the first nozzle means, the second control valve means including a movable element for controlling passage of gas to said mixing chamber of the first nozzle means;

electrical control means connected to said movable elements of said first and second valve means for controlling the movement of said movable elements responsive to sensing signals; and

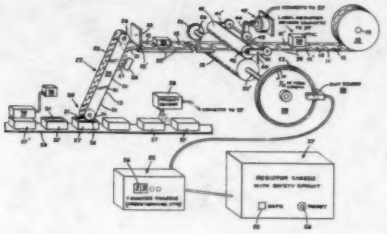
sensing means located adjacent to the etching chamber near said exit portal for sensing the presence of said work piece as said work piece exits the etching chamber, the sensing means being connected to the electrical control means for providing a first electrical sensing signal to the control means when the presence of said work piece is sensed whereby said movable elements of the first and second control valve means are positioned to permit passage of said liquid and gas to said mixing chamber of the first nozzle means.

4,397,709

LABELING MACHINE

Alfred F. Schwenzer, Totowa, N.J., assignor to NJM, Inc., Fairfield, N.J.

Filed Aug. 26, 1982, Ser. No. 411,652
Int. Cl.[3] B32B 1/00
U.S. Cl. 156—351 6 Claims



1. In a labeling machine, a label applying station, means for feeding a succession of products toward and past said applying station, means for feeding a series of labels along a path toward said applying station, a label length monitor operatively connected to said label feeding means and including means for counting a predetermined number of given fractional label lengths totaling a whole length greater than the length of a given label as the label passes a given point in the path of feed thereof, and means to control said label feeding means, product sensor means connected to said control means and operable to cause said control means to start the feed of a label for the product detected by said product sensor means, a label sensor located at said given point and actuated each time the leading edge of a given label moves through said given point, said label sensor being connected to said control means and operable to actuate said control means to stop the operation of said label feeding means when the leading edge of a succeeding label moves through said given point before said counting means has counted said predetermined number of given fractional lengths, said counting means being operable to actuate said control means to stop the operation of said label feeding means if said label sensor has failed to actuate said control means before said predetermined number of lengths has been counted by said counting means.

4,397,710

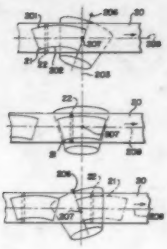
MACHINE FOR APPLYING INDICIA TO TAPERED OR STRAIGHT CYLINDRICAL ARTICLES

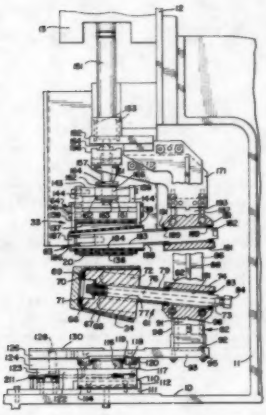
Barney G. Gaylord, Naperville, Ill., assignor to The Meyercord Co., Carol Stream, Ill.

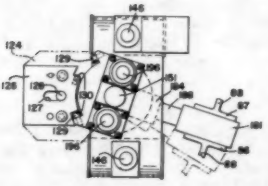
Filed Jan. 22, 1982, Ser. No. 341,860
Int. Cl.[3] B32B 31/00; B44C 1/00; B65B 13/34
U.S. Cl. 156—475 10 Claims

1. A machine for transfering a series of indicia from a relatively long web to a series of articles, each of said articles having a taper on its outer wall surface and the indicia being spaced on said web, comprising a support frame, a movable frame connected to said support frame for pivotal movement on an axis and linear movements relative to said axis and said support frame, a mandrel fastened to said movable frame for rotatably supporting an article, pressure means including a tapered pressure roller which is rotatably mounted on said movable frame, said mandrel and said pressure roller having adjacent sides which are substantially parallel, web transport means for holding the web between said mandrel and said pressure roller in a plane that is substantially parallel to said adjacent sides, power means for moving said pressure roller and said mandrel towards each other to press the web including an indicium tightly against said outer wall surface of an article on said mandrel, said web transport means including

web drive means for moving the web past said mandrel and said pressure means, said mandrel and said pressure roller







rotating with said web movement and moving pivotally and linearly in an arcuate movement relative to said web.

4,397,711

CRYSTALLOGRAPHIC ETCHING OF III–V SEMICONDUCTOR MATERIALS

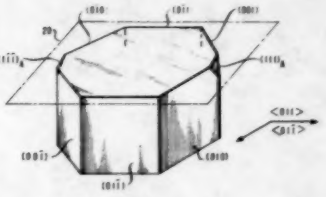
Vincent M. Donnelly, Berkeley Heights; Daniel L. Flamm, Chatham Township, Morris County, and Dale E. Ibbotson, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 1, 1982, Ser. No. 432,317

Int. Cl.³ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **8 Claims**

1. A process for etching semiconductor bodies, said bodies comprising a composition based on III–V semiconductor materials chosen from the group consisting of GaAs, InP, ternaries of InP and GaAs, and quaternaries of InP and GaAs, wherein at least a portion of said body is masked with a masking material and said body is subjected to a gaseous etchant under conditions which cause etching of said body characterized in that said etchant and said conditions are chosen to produce a differential etch rate between crystallographic planes of said material and said mask is oriented so that (1) at some point along the periphery of said mask a crystallographic plane exists which includes the direction defined by a tangent at said point, (2) said crystallographic plane etches more slowly than all



other crystallographic planes which intersect said chosen plane and which also include said direction, and (3) a normal to said crystallographic plane is a linear combination with positive coefficients of (A) a vector perpendicular to the surface of said body at said point in a direction away from said body, and (B) a vector lying in said surface, perpendicular to said tangent, and directed away from said mask.

4,397,712

SEMI-CHEMICAL PULPING PROCESS

John Gordy, Richmond, Canada, assignor to New Fibers International, Nassau, The Bahamas

Continuation-in-part of Ser. No. 237,723, Feb. 24, 1981, abandoned, which is a continuation of Ser. No. 83,784, Oct. 11, 1979, Pat. No. 4,259,147, which is a continuation of Ser. No. 842,262, Oct. 4, 1977, abandoned, which is a continuation of Ser. No. 551,259, Feb. 20, 1975, abandoned. This application Sep. 21, 1981, Ser. No. 303,944

Int. Cl.³ D21C *3/20*

U.S. Cl. 162—19 **14 Claims**

1. A process for producing corrugated medium pulp comprising: providing a pulping solution containing a lignin extract from green chips in an aqueous solution of a lignin dissolving mild organic base; providing a heated vessel; admitting a predetermined quantity of chips and solution to said vessel; impregnating said chips with said solution; subsequently lowering the level of solution in said vessel below the chips and circulating solution vapor above, below and on all sides of said chips to digest said chips under a vapor dome, under conditions of temperature and pressure effective to initiate a lignin depolymerization reaction in said chips for a predetermined period of time; refining said chips to produce said pulp; and separating the used solution from the pulp.

9. A process for producing corrugating medium pulp comprising: providing a pulping solution containing a lignin extract from green chips in an aqueous solution of a lignin dissolving mild organic base; providing a heating vessel; admitting a predetermined quantity of chips and solution to said vessel; heating said solution; subsequently digesting said chips by lowering the level of solution in said vessel below the chips and circulating solution vapor above, below and on all sides of said chips to digest said chips under a vapor dome under conditions of temperature and pressure effective to initiate a lignin depolymerization reaction in said chips for predetermined period of time; refining said chips to produce said pulp; and separating the used solution from the pulp.

4,397,713

METHOD OF PROCESSING WASTE PAPER AND INSTALLATION FOR THE PERFORMANCE OF THE METHOD

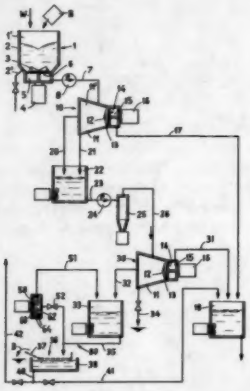
Gerhard Lambrecht, Fronreute, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,117

Claims priority, application Switzerland, Nov. 15, 1979, 10187/79

Int. Cl.³ D21B *1/32*

U.S. Cl. 162—261 4 Claims



1. An apparatus for preparing waste paper for obtaining stock suspension for the fabrication of new paper and cardboard, comprising:

a stock slusher through which passes waste paper;

at least one fiberizer arranged after and cooperating with the stock slusher;

said at least one fiberizer containing a housing; a screen and a motor-driven rotor arranged within said housing;

said rotor having arm means movable along said screen;

outlet means through which flows good stock which has passed through the screen arranged in flow communication with said screen;

said housing having at least one outlet for overflow material effluxing from said housing;

said screen of said at least one fiberizer containing perforations of a size suitable for separating fibers which can be directly used for paper fabrication;

a vat of a papermaking machine connected in flow communication with the outlet means for the good stock of said at least one fiberizer;

said at least one fiberizer contains an outlet line for lighter overflow material;

a dynamic vibrator with which there is operatively connected said outlet line for the lighter overflow material of said at least one fiberizer;

a vat means located at the outlet line for the lighter overflow material of said at least one fiberizer and flow communicating said outlet line with said dynamic vibrator;

circulation flow means provided for said vat means;

a despeckling device arranged in said circulation flow means of said vat means; and

a throughflow container provided for the dynamic vibrator; and

said throughflow container being connected with said vat of the papermaking machine.

4,397,714

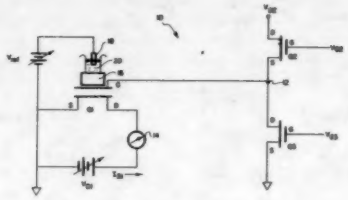
SYSTEM FOR MEASURING THE CONCENTRATION OF CHEMICAL SUBSTANCES

Jiri Janata, Salt Lake City; Robert J. Huber, Bountiful, and Rosemary L. Smith, Salt Lake City, all of Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Jun. 16, 1980, Ser. No. 159,994

Int. Cl.³ G01N *27/26*

U.S. Cl. 204—1 T 17 Claims



1. In a transducer system for detecting chemical properties of substances and including a semiconductor substrate having a doping polarity, a pair of spaced-apart diffusion regions located at the surface of the substrate and having doping polarity opposite that of said substrate material, an electrical insulator material overlying at least a portion of said diffusion regions and the surface of the substrate lying between the diffusion regions, a chemical selective system including a chemical selective membrane disposed over at least a portion of said insulator material, and a reference electrode connected in circuit with said spaced apart diffusion regions through a potential source, the combination thereof with

an electrical conductive material disposed between the substrate and diffusion regions and the chemical selective membrane so as to be located above at least a portion of the substrate which is between the diffusion regions,

a first switch element coupled to the conductive material and operable to selectively connect the conductive material to a voltage source, and

a second switch element coupled to the conductive material and operable to selectively connect the conductive material to a ground potential source.

4,397,715

PROCESS OF MANUFACTURING SCREEN MATERIAL

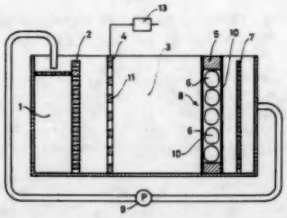
Anand Mohan, 4 't Spiker, 7231 JS Warnsveld, and Johan A. de Hek, 16 Graslaan, 6833 CJ Arnhem, both of Netherlands

Filed Sep. 28, 1981, Ser. No. 306,246

Claims priority, application Netherlands, Sep. 30, 1980, 8005427

Int. Cl.³ C25D *1/08, 5/08*

U.S. Cl. 204—11 14 Claims



1. Process of electrolytically manufacturing screen material by depositing a metal upon a sieve-like porous matrix having apertures therethrough, the matrix having a surface from

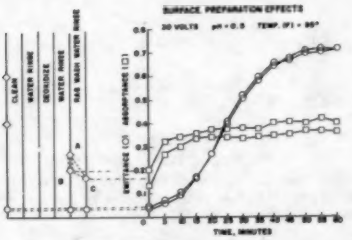
which a screen of deposited metal can be removed, the process comprising, placing the matrix in a electrolytic bath, the bath containing at least one brightener, connecting the matrix as a cathode, spacing an anode from the cathode, flowing the bath liquid at least during part of the electrolytic deposition, through the apertures in the matrix connected as the cathode and only from the cathode toward the anode.

4,397,716

VARIABLE ANODIC THERMAL CONTROL COATING

Charles S. Gilliland, Poquoson, and Roy J. Duckett, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 9, 1982, Ser. No. 367,134
Int. Cl.³ C25D 5/44
U.S. Cl. 204—33 **9 Claims**



1. A method of providing a thermal control coating on an aluminum or aluminum alloy surface with the coating having selected values within the ranges of 0.10 to 0.72 thermal emittance (ϵ_T) and 0.2 to 0.4 solar absorptance (α_s) comprising the steps of

providing an aluminum or aluminum alloy material having a thickness of at least 0.001 inch and a surface area thereon adapted to be subjected to elevated temperatures;

cleaning the surface area by immersion in a metal cleaning bath at a temperature of 160° F. to 200° F. for five to ten minutes;

removing the surface from the cleaning bath and rinsing in a room temperature water bath;

placing the surface in a deoxidixer solution at a temperature of 150° F. for two to five minutes;

removing the surface from the deoxidizer solution and rinsing in a room temperature water bath with surface agitation to remove all particulates from the surface;

drying the surface by forced filtered air and measuring the initial thermal emittance and solar absorptance at this point;

immersing the dried aluminum surface in a chromic acid solution;

applying a controlled voltage between the surface and the chromic acid solution at a rate and for a period of time required to provide an anodized coating on the surface exhibiting the desired thermal emittance and solar absorptance respective ranges of 0.10 to 0.72 and 0.2 to 0.4.

4,397,717

ALKALINE ZINC ELECTROPLATING BATH WITH OR WITHOUT CYANIDE CONTENT

Simeon Acimovic; Karl-Heinz Lindemann, and Volker G. Kunz, all of Trebur, Fed. Rep. of Germany, assignors to Elektro-Brite GmbH & Co. KG., Trebur, Fed. Rep. of Germany

Filed Feb. 10, 1981, Ser. No. 233,170
Int. Cl.³ C25D 3/22, 3/24
U.S. Cl. 204—55 Y **4 Claims**

1. Alkaline zinc electroplating aqueous bath containing a zinc salt, an alkali metal hydroxide, optionally other usual additives, and, if desired, an alkali metal cyanide and further one or more reaction products of an epihalohydrin with a nitrogen compound having at least 2 nitrogen atoms, characterized in that it contains as the epihalohydrin-reaction product a compound which has been obtained by reacting

(a) the reaction product of a heterocyclic nitrogen compound containing at least two reactive nitrogen atoms which compound may be substituted with 1 or 2 methyl, ethyl or amino groups, with epihalohydrin in a molar ratio of 1:1 or of mixtures of such reaction products (in a molar of 1:1) with

(b) ammonia, an aliphatic amine, polyamine and/or polyimine in a molar ratio of 1:0.3 to 1:1, said bath being further characterized in that it contains in addition the reaction product of a polyvalent alcohol or a mixture of polyvalent alcohols with epichlorohydrin or epibromohydrin in a molar ratio of 1:1, and further reacting the compound obtained with a heterocyclic compound having 1 or 2 nitrogen hetero-atoms which may be substituted by alkyl or alkoxy groups containing 1 to 3 carbon atoms, hydroxy or carboxy groups, or salts thereof in a molar ratio of 1:1.

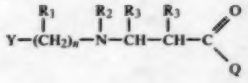
4,397,718

ZINC PLATING BATHS WITH CONDENSATING POLYMER BRIGHTENERS

Sylvia Martin, Detroit, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed May 24, 1982, Ser. No. 381,090
Int. Cl.³ C25D 3/22, 3/24
U.S. Cl. 204—55 Y **16 Claims**

1. A zinc electroplating bath comprising a conductive aqueous solution containing zinc ions and a brightening amount of a water soluble brightening additive selected from the group consisting of a monomer of the following general formula and polymers thereof:



wherein:

n is from 1 to about 6;

Y is —OX, —NX_2, —SO_3H, —SO_3M, —COOH, —COOM, —SX, or —CN;

X is H, or an alkanol, alkamine, sulfoalkyl, carboxyalkyl, hydroxyaryl, sulfoaryl, carboxyaryl, or aminoaryl having from 1 to about 10 carbon atoms;

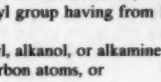
M is H, Li, Na, K, Be, Mg or Ca;

Q is —OR_4, —$N(R_4)_2$, —OZ, —OM, or halogen;

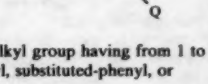
Z is an aryl group or a substituted aryl group having from about 6 to about 14 carbon atoms;

R_1 is H or an alkyl group having from 1 to about 4 carbon atoms;

R_2 is H or an alkyl, alkanol, or alkamine group having from 1 to about 4 carbon atoms, or

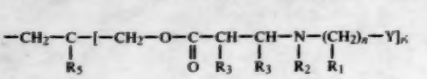


R_3 is H or an alkyl group having from 1 to about 4 carbon atoms, phenyl, substituted-phenyl, or



R_4 is H or an alkyl, alkenyl, alkynyl, alkanol, alkenol, al-

kynol, keto alkyl, keto alkynyl, keto alkenyl, alkamine, alkoxy, polyalkoxyl, sulfoalkyl, carboxyalkyl, mercapto alkyl, or nitriloalkyl group having from 1 to about 12 carbon atoms, phenyl or substituted phenyl or



R_5 is H, —OH, or a hydroxyalkyl group having from 1 to about 4 carbon atoms;

r is 1 to about 3;

and mixtures thereof.

4,397,719

PROCESS FOR PREPARING NITROGEN BY AMMONIUM NITRATE DECOMPOSITION

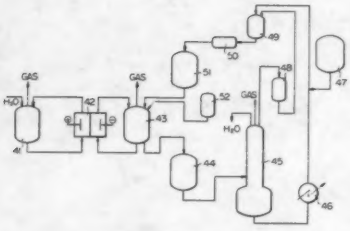
Mitsuo Yoshida, Nobeoka, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka and Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, both of, Japan

Division of Ser. No. 81,897, Oct. 4, 1979, Pat. No. 4,312,722. This application Sep. 14, 1981, Ser. No. 302,129

Claims priority, application Japan, Oct. 6, 1978, 53-122736; Oct. 6, 1978, 53-122737

Int. Cl.³ C25B *1/00, 9/00, 15/08;* C01B *21/00*

U.S. Cl. 204—91 **18 Claims**



1. A process for the decomposition of ammonium nitrate, comprising supplying an aqueous solution containing ammonium nitrate as a catholyte into a cathode chamber of an electrolytic cell including cathode and anode chambers separated by a cation exchange membrane, subjecting the solution to electrolytic reduction while maintaining the pH of the solution at a value above about 4, thermally decomposing the electrolytically reduced catholyte outside the electrolytic cell and removing formed nitrogen and water from the reaction system.

4,397,720

REMOVAL OF CHLORATE AND HYPOCHLORITE FROM ELECTROLYTE CELL BRINE

Sanders H. Moore, and Maurice R. Smith, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 29, 1982, Ser. No. 426,336

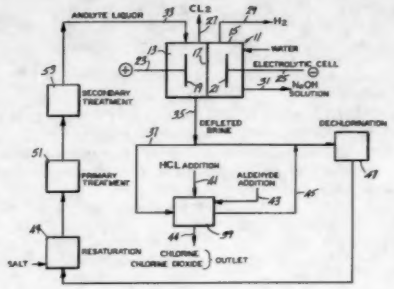
Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **15 Claims**

1. In a process for purifying an alkali metal halide brine liquor used in the production of an alkali metal hydroxide and a halogen by the electrolysis in a cell having an anolyte and a catholyte compartment, said alkali metal halide brine liquor being circulated through said anolyte compartment wherein hypohalites and halates are produced within said brine liquor, said brine liquor then being recovered from said cell, dehalogenated, saturated with additional alkali metal halide and returned into said anolyte compartment, the improvement comprising:

(a) collecting at least a portion of said recycling liquor before said resaturation step;

(b) contacting said collected portion with at least a stoichiometric amount of an acid and an aldehyde for a residence time sufficient to reduce substantially all of the alkali metal



hypohalite and halate within said portion to halogen and alkali metal halide; and

(c) conveying said contacted portion to said resaturation step.

4,397,721

PICKLING OF ALUMINUM

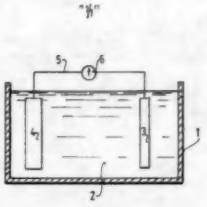
Robertus Exalto, Amsterdam, and Adriaan Kwakernaak, Aalsmeer, both of Netherlands, assignors to Fokker B.V., Schiphol-Oost, Netherlands

Filed Feb. 11, 1982, Ser. No. 347,974

Claims priority, application Netherlands, Feb. 12, 1982, 8100687

Int. Cl.³ C25F *1/04*

U.S. Cl. 204—144 **11 Claims**



1. A pickling process for aluminum articles, comprising the steps of:

(a) providing a pickling bath consisting essentially of sulfuric acid;

(b) positioning two electrodes, viz. an anode and a cathode, into said pickling bath, said anode comprising an aluminum article to be pickled and said cathode comprising at least one carbon body;

(c) interconnecting said anode and said cathode by means of an external short-circuit connection; and

(d) maintaining said short-circuit connection during a period of time sufficient to cause complete pickling of said aluminum article.

4,397,722

POLYMERS FROM AROMATIC SILANES AND PROCESS FOR THEIR PREPARATION

Ivan Haller, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 221,605, Dec. 31, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 406,638

Int. Cl.³ C08G *77/00;* C08F *2/46*

U.S. Cl. 204—159.13 **10 Claims**

1. A polymer formed by low power, radio frequency glow

discharge polymerization of a completely aromatic silane monomer at elevated temperature and low vapor pressure.

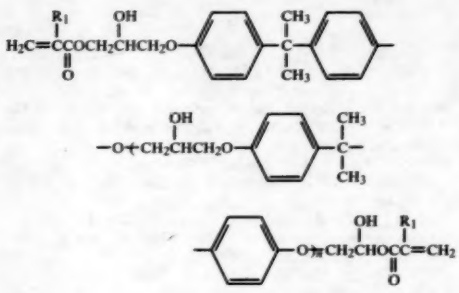
4,397,723

COATING COMPOSITIONS AND RESIN MOLDINGS USING SAME

Takao Inoue, Hirakata; Tamotsu Wakahata, Katano; Yukio Maeda, Hirakata, and Ikuo Niboshi, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 24, 1981, Ser. No. 247,085
Claims priority, application Japan, Mar. 27, 1980, 55/39735
Int. Cl.³ C08F 2/46
U.S. Cl. 204—159.15 6 Claims

1. A coating composition comprising (1) 100 parts by weight of a mixture which comprises 50–98% by weight of at least one polyfunctional monomer having at least 3 acryloyloxy groups and/or methacryloyloxy groups per molecule, and 2–50% by weight of a bifunctional oligomer of the formula



wherein R_1 represents hydrogen or methyl, and n is an integer of 1 through 5, said percentages by weight being based on the total weight of said polyfunctional monomer and bifunctional oligomer, (2) 0.01–10 parts by weight of a light sensitizer, and (3) 10–2,000 ppm of a polymerization inhibitor, said composition being capable of forming a bridge hardened film by the application thereto of activation energy rays.

4,397,724

APPARATUS AND METHOD FOR PLASMA-ASSISTED ETCHING OF WAFERS

Joseph M. Moran, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 24, 1981, Ser. No. 295,839
Int. Cl.³ C23C 15/00
U.S. Cl. 204—192 E 32 Claims

1. Apparatus for plasma-assisted dry etching of a layer formed on a wafer, said apparatus comprising

a reaction chamber,

means for establishing an etching plasma within said chamber, said chamber including surfaces exposed to said plasma,

and a covering of a polyarylate polymer on at least some of said surfaces.

4,397,725

APPARATUS FOR MEASURING ELECTROCHEMICAL ACTIVITY

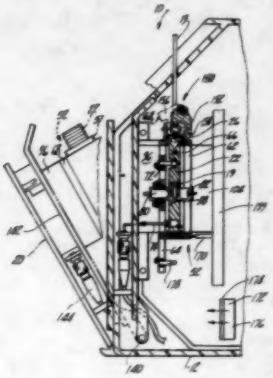
Steven E. Enzer, Brooklyn, and Robert J. Sarrine, Ann Arbor, both of Mich., assignors to Transidyne General Corp., Ann Arbor, Mich.

Filed Dec. 15, 1980, Ser. No. 216,458
Int. Cl.³ G01N 27/46
U.S. Cl. 204—406 17 Claims

1. Apparatus for measuring electrochemical activity in a liquid, said apparatus being adapted for use with a cartridge having spaced indicating and reference electrodes bridged by a chamber and including an ampule containing electrolyte solution carried by upper portions of said cartridge, said apparatus comprising:

a housing with a door pivotally mounted on said housing;

socket means mounted on the door for receiving said cartridge in an upright position when the door is pivoted outwardly from the housing; and



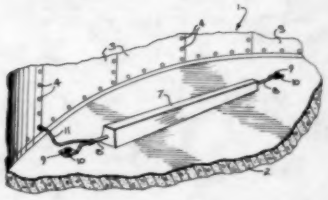
crusher means for breaking the ampule when the door is pivoted inwardly towards said housing to thereby introduce the electrolyte into the chamber to cover the electrodes, said crusher means comprising a generally U-shaped member defining lip and leg portions and means for pivotally mounting said member in said housing such that said lip is arranged to be struck by said cartridge when the door is swung into the closed position thereby pivoting said leg portion against the ampule to break same.

4,397,726

CATHODICALLY PROTECTED VESSEL

Joseph A. Schwert, Cary, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Oct. 13, 1981, Ser. No. 310,498
Int. Cl.³ C23F 13/00
U.S. Cl. 204—197 8 Claims

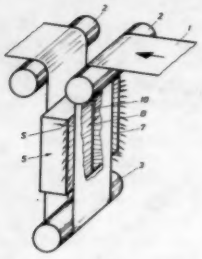


1. A cathodically protected tank assembly, comprising an open top tank to contain an electrically conductive liquid exposed to the atmosphere, said tank including a bottom and a side wall composed of metal components, an anode formed of a metal electropositive to said metal components and disposed adjacent the bottom of said tank, anchoring means for anchoring said anode to said bottom, and connecting means separate from said anchoring means for electrically connecting the anode to said metal components, said connecting means extending in an electrically insulated manner through the wall of said tank to the outside of the tank and being electrically connected on the outside of the tank to said metal components.

4,397,727
DEVICE FOR ELECTRODEPOSITING A SINGLE-SIDED METAL COATING ONTO A METAL STRIP, ESPECIALLY ONTO STEEL STRIP

Kurt Degen, Mending, Fed. Rep. of Germany, assignor to Rasselstein AG, Neuwied, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 356,995
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110225
Int. Cl.³ C25D 17/00
U.S. Cl. 204—206 10 Claims

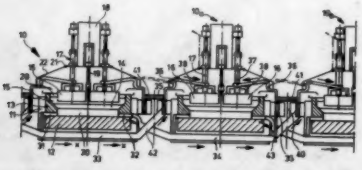


1. A device for galvanically depositing a metal coating on a side of a metal strip, including an anode housing which is connected to a power supply and includes at least one substantially vertical and flat electroplating plate, said metal strip being connected to said power supply, serving as a cathode, and being supported for substantially vertical movement past said electroplating plate parallel thereto and spaced slightly therefrom, said electroplating plate having at least one outlet slot, an electrolyte provided in said anode housing and flowing through said outlet slot into the space between said electroplating plate and said metal strip, and pump means for pumping said electrolyte back into said anode housing, the improvement comprising wherein said electroplating plate has a single said outlet slot which is provided in a center region thereof, extends substantially in the direction of movement of said metal strip, is inclined with respect to a vertical reference by an acute angle of approximately 4°–8°, and tapers in width toward the lower end thereof.

4,397,728
DEVICE FOR CONDUCTING ELECTRIC CURRENT BETWEEN ELECTROLYTIC CELLS

Hans Pfister, Dübendorf; Otto Knaisch, Uerikon, and Jean-Marc Blanc, Sierre, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 15, 1980, Ser. No. 216,422
Claims priority, application Switzerland, Dec. 21, 1979, 11378/79
Int. Cl.³ C25C 3/16
U.S. Cl. 204—243 M 13 Claims



1. An apparatus for conducting electrical current from the cathode to the anode of transversely disposed electrolytic cells comprising:

a first electrolytic cell having a cathode;

a second electrolytic cell having at least one anode and a compensating conductor bar, said at least one anode and said compensating conductor bar being in electrical contact;

said first electrolytic cell being provided with at least one cathode bar remote from said second electrolytic cell, at least one cathode bar proximate to said second electrolytic cell and at least one conductor bar passing under said first electrolytic cell, said at least one conductor bar having one end in electrical contact with said at least one cathode bar remote from said second electrolytic cell and the other end in electrical contact with said compensating conductor bar of said second electrolytic cell; and

said second electrolytic cell being provided with at least one conductor bar passing under said second electrolytic cell, said at least one conductor bar having one end in electrical contact with said at least one cathode bar proximate to said second electrolytic cell and the other end in electrical contact with said compensating conductor bar of said second electrolytic cell.

4,397,729
CERMET ANODE ELECTROWINING METALS FROM FUSED SALTS

Jean-Jacques R. Duruz, and Jean-Pierre Derivaz, both of Geneva, Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

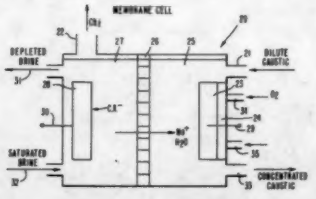
PCT No. PCT/US81/00064, § 371 Date Sep. 3, 1981, § 102(e) Date Sep. 3, 1981, PCT Pub. No. WO81/02027, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 16, 1981, Ser. No. 319,091
Claims priority, application United Kingdom, Jan. 17, 1980, 8001550
Int. Cl.³ C25C 3/12, 3/00
U.S. Cl. 204—243 R 4 Claims

1. An anode for electrowinning molten metal from a fused salt in an electrolytic cell comprising at least one anode immersed in a fused salt bath above a cathode disposed at the base of the cell, characterized in that the anode consists essentially of a cermet material composed of a ceramic phase formed of at least one oxide selected from the group consisting of nickel, ferrite and hematite; said ceramic phase being uniformly mixed with a metallic phase formed of at least one metal selected from the group consisting of palladium, platinum, iridium, rhodium, gold and alloys of these metals among themselves or with iron, cobalt, nickel or copper.

4,397,730
ELECTROLYTIC CELLS WITH ALKALINE ELECTROLYTES CONTAINING TRIFLUOROMETHYLANE SULFONIC ACID

Perminder S. Bindra, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,013
Int. Cl.³ H01M 8/08; C25B 1/10
U.S. Cl. 204—252 13 Claims



1. An electrolytic system with an anode electrode and a cathode electrode and at least one electrolyte between said anode and said cathode and said electrolyte plus TFMSA

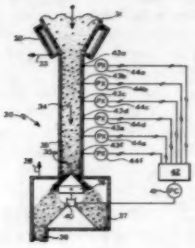
being included in a solution together between said cathode and said anode.

4,397,731

DISCHARGE OF SOLIDS

F. Morgan Warzel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 13, 1981, Ser. No. 282,770
Int. Cl.³ C10G 1/04
U.S. Cl. 208—8 LE 13 Claims



1. A process to discharge a mass of particulate solids mixed with fluid from a high pressure zone comprising

(a) introducing said mass from said high pressure zone into a discharge channel at the input end thereof, said channel having essentially cylindrical or slightly frustoconical shape and being in open fluid communications with said high pressure zone, and having a length that is considerably larger than the diameter or average diameter of said discharge channel,

(b) establishing a dense bed of said mass of particulate solids in said discharge channel, which dense bed is a tightly packed bed of solid particles touching each other thereby forming pores filled with fluid,

(c) moving said dense bed of particulate solids in frictional contact with the walls confining said discharge channel from the input end thereof to the output end thereof, and

(d) releasing said mass of particulate solids from the output end of said discharge channel across a throttle element into a zone of significantly reduced pressure as compared to the pressure in the high pressure zone, with the provision that the pressure drop via the throttle element is small as compared to the pressure drop along the discharge channel achieved by means of the frictional contact of the mass of particulate solids with the wall confining the discharge channel.

10. Apparatus for discharging a solid particulate material comprising

(a) a high pressure chamber containing a mass of particulate solids mixed with fluid,

(b) a long cylindrical or slightly frustoconical discharge channel having a ratio of length to diameter or respectively average diameter in the range of 20 to 1,000, and being connected to the outlet of said high pressure chamber as a feed means with the input end thereof and having an output end,

(c) connected to the output end of said discharge channel a moveable throttle element,

(d) a discharge chamber of significantly reduced pressure as compared to that in said high pressure chamber, said discharge chamber connected with the output end of said discharge channel and said throttle element allowing the material from said discharge channel to discharge via said throttle element into said discharge chamber and

(e) a filter means located at the outlet of the high pressure chamber and upstream of said discharge channel for removal of fluid from said mass and arranged so that the solid material leaving the filter enters the inlet end of said discharge material.

4,397,732

PROCESS FOR COAL LIQUEFACTION EMPLOYING SELECTIVE COAL FEED

David S. Hoover, New Tripoli, and Edwin N. Givens, Bethlehem, both of Pa., assignors to International Coal Refining Company, Allentown, Pa.

Filed Feb. 11, 1982, Ser. No. 347,836
Int. Cl.³ C10G 1/06
U.S. Cl. 208—8 LE 30 Claims

1. A method for selection of feed coal for processing by direct liquefaction utilizing catalytic materials derived solely from said feed coal to produce low-ash, low-sulfur hydrocarbon products including solvent refined coal, and coal derived pentane soluble oil, which consists essentially of:

(a) removing a substantial portion of mineral material from a run-of-mine coal to provide a washed coal having at least about 1.0%, by weight of pyritic sulfur,

(b) measuring the vitrinite reflectance of said coal, and

(c) selecting for use as said feed coal substantially only said washed coal having a vitrinite reflectance of less than about 0.70%.

4,397,733

PROCESS FOR REDUCING THE RAMSBOTTOM CARBON TEST OF ASPHALT

Jacobus Eilers, and Willem H. J. Stork, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 24, 1982, Ser. No. 391,809
Claims priority, application Netherlands, Jul. 17, 1981, 8103396
Int. Cl.³ C10G 67/04
U.S. Cl. 208—96 9 Claims

1. A process for the preparation of a hydrocarbon mixture having an RCT of (a) %w and an initial boiling point of T° C., wherein an asphaltic bitumen obtained in the solvent deasphalting of a distillation residue from a crude mineral oil, which asphaltic bitumen has an RCT of (b) %w and an average molecular weight M, is subjected to a catalytic hydrotreatment in order to reduce the RCT; the product obtained is separated by distillation into an atmospheric distillate and an atmospheric residue having an initial boiling point of T° C.; either so much asphaltic bitumen is separated from the atmospheric residue by solvent deasphalting that a deasphalted atmospheric residue having the desired RCT of (a) %w is obtained, or the atmospheric residue is separated by distillation into a vacuum distillate and a vacuum residue, from which vacuum residue so much asphaltic bitumen is separated by solvent deasphalting that a deasphalted vacuum residue is obtained which has such an RCT that, when it is mixed with the vacuum distillate, a mixture having the desired RCT of (a) %w is obtained; and the catalytic hydrotreatment is carried out under such conditions as to obey the relation:

$$RCT \text{ reduction} = \frac{b-c}{b} \times 100 = \frac{-48.5 - 0.108 \times T + 32.1 \times \log M + (18.6 - 5.36 \times \log M) \times b}{1.4 - 1.08 \times 10^{-3} \times T} \pm 5.2,$$

where (c) is the RCT of the atmospheric residue having an initial boiling point T° C. of the hydrotreated product.

4,397,734
PROCESS FOR REDUCING RAMSBOTTOM CARBON TEST OF SHORT RESIDUES

Jacobus Eilers, and Willem H. J. Stork, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 15, 1982, Ser. No. 388,778

Claims priority, application Netherlands, Jun. 25, 1981, 8103067

Int. Cl.³ C10G 07/04

U.S. Cl. 208—96 **9 Claims**

1. A process for the preparation of a hydrocarbon mixture having an RCT of (a) %w and an initial boiling point of T_1°C., wherein a vacuum residue I obtained in the distillation of a crude mineral oil, which vacuum residue has an RCT of (b) %w and a 5 %w boiling point of T_5°C., is subjected to a catalytic hydrotreatment in order to reduce the RCT; the product obtained is separated by distillation into an atmospheric distillate and an atmospheric residue having an initial boiling point of T_1°C.; either so much asphaltic bitumen is separated from the atmospheric residue by solvent deasphalting that a deasphalted atmospheric residue having the desired RCT of (a) %w is obtained, or the atmospheric residue is separated by distillation into a vacuum distillate and a vacuum residue II, from which vacuum residue II so much asphaltic bitumen is separated by solvent deasphalting that a deasphalted vacuum residue is obtained which has such an RCT that, when it is mixed with the vacuum distillate, a mixture having the desired RCT of (a) %w is obtained; and the catalytic hydrotreatment is carried out under such conditions as to obey the relation:

$$RCT \text{ reduction} = \frac{b - c}{b} \times 100 = \frac{73.5 \pm 5 - 0.108 \times T_1 + 2.55 \times b - 0.05 \times T_5}{1.40 - 1.08 \times 10^{-3} \times T_1},$$

where (c) is the RCT of the atmospheric residue with an initial boiling point T_1°C. of the hydrotreated product.

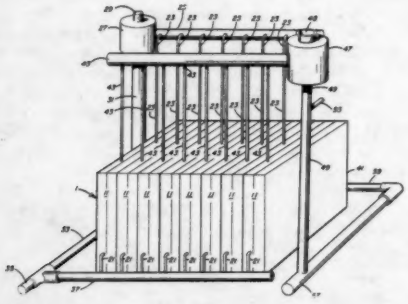
4,397,735
BIPOLAR ELECTROLYZER PROCESS

Colonel R. Dilmore, Portland; Carl W. Raetzsch, Jr., and James J. McGinley, both of Corpus Christi, all of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 3, 1981, Ser. No. 299,237

Int. Cl.³ C25B 1/46, 1/02

U.S. Cl. 204—98 **9 Claims**



1. In a method of operating a bipolar electrolyzer comprising feeding a brine electrolyte to anolyte compartments of the individual electrolytic cells and an aqueous electrolyte to catholyte compartments of the individual electrolytic cells, imposing an electrical potential across the electrolyzer, recovering chlorine and anolyte liquor from the anolyte compartment, and hydrogen and aqueous alkali metal hydroxide from the catholyte compartment, the improvement comprising:

(1) recovering chlorine and anolyte liquor from individual cells of the electrolyzer through individual vertical risers at an anolyte liquor flow rate sufficient to provide flow characterized by bubbles of gas moving along at substantially the same velocity as the anolyte liquor, while substantially avoiding flow characterized by periodic waves of high velocity frothy slugs and alternating plugs of liquid and gas;

(2) collecting the chlorine and anolyte liquor from the individual risers in a substantially horizontal header;

(3) transporting the collected chlorine and anolyte liquor from all of the cells in the electrolyzer through the substantially horizontal header to a chlorine disengaging chamber;

(4) separating the chlorine from the anolyte liquor in the disengaging chamber;

(5) recovering chlorine from the disengaging chamber;

(6) recovering anolyte liquor from the disengaging chamber;

(7) adding concentrated brine to the anolyte liquor whereby to form feed brine;

(8) returning the feed brine to the electrolyzer;

(9) separating hydrogen from the aqueous alkali metal hydroxide whereby to recover the hydrogen; and

(10) separating the aqueous alkali metal hydroxide into product alkali metal hydroxide and return catholyte liquor, recovering the product alkali metal hydroxide, adding water to the return cell liquor, and returning the water and return cell liquor to the electrolyzer.

4,397,736
HYDROTREATING SUPERCRITICAL SOLVENT EXTRACTS IN THE PRESENCE OF ALKANE EXTRACTANTS

Jim Y. Low, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 1, 1981, Ser. No. 249,804

Int. Cl.³ C10G 1/04, 21/14

U.S. Cl. 208—11 LE **5 Claims**

1. A process for recovering hydrocarbons from naturally-occurring low organic carbon content carbonaceous material selected from oil shale, tar sand, and mixtures thereof comprising the step of contacting said material under supercritical conditions with an added mixture of structurally analogous hydrocarbon solvents wherein at least one solvent is aromatic, at least one solvent is cycloaliphatic and is structurally analogous to the aromatic solvent, and wherein the cycloaliphatic solvent is present in an amount of 2–10% by weight based on the total solvent weight.

4,397,737
HEAT EXCHANGER ANTIFOULANT

Louis R. Kray, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 26, 1982, Ser. No. 352,817

Int. Cl.³ C10G 9/16

U.S. Cl. 208—48 AA **16 Claims**

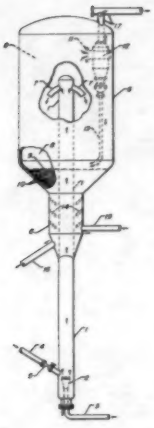
1. A process for reducing heat exchanger fouling in which a liquid hydrocarbon stream is passed through a heat exchanger at a temperature from 0° to 1500° F. wherein from 1 to 500 parts per million of a poly(oxyalkylene) carbamate is added to said hydrocarbon stream.

4,397,738

PROCESS FOR THE SEPARATION OF PARTICULATE SOLIDS FROM VAPORS

Thomas L. Kemp, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 16, 1982, Ser. No. 418,954
Int. Cl.[3] C10G 11/18; F27B 15/00
U.S. Cl. 208—161 7 Claims



1. A process for separating particulate solids from a stream comprising vapors and particulate solids passed in admixture through a vertically elongated contacting zone, which process comprises discharging said stream from said contacting zone into the main body of a disengagement zone, said disengagement zone having an interior cylindrical surface, the cylindrical axis of which is substantially vertical, altering the direction of flow of said stream upon the discharge of said stream from said contacting zone so as to effect the flow of said stream to be in a downward direction along the curvature of said interior surface and at a positive angle to the vertical, said stream having a downward progression while maintaining a helical twist of a vertical axis, whereby said solids fall to a bottom portion of said disengagement zone and said vapors rise to an upper portion thereof.

5. An apparatus useful for separating particulate solids from a stream comprising vapors and particulate solids in admixture, said apparatus comprising in combination;

(a) a vertical riser conduit having a discharge opening through which said stream may pass;

(b) a cylindrical vessel containing said discharge opening, the cylindrical axis of said vessel being vertical and said opening discharging into the main body of the vessel;

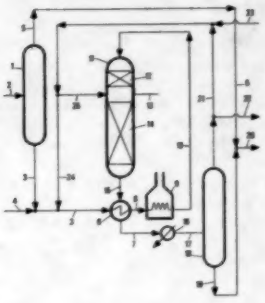
(c) a deflecting means comprising a curved surface juxtaposed with respect to said discharge opening such that said stream passing from said discharge opening is deflected in a downward direction along the curvature of the interior surface of said vessel at a positive angle to the vertical, said deflecting means providing a downward progression to said stream while maintaining a helical twist of a vertical axis.

4,397,739

PROCESS FOR DESULFURIZING A CATALYTIC CRACKING OR STEAM CRACKING EFFLUENT

Yves Jacquin, Sevres; Chan T. Dinh, Le Vesinet; Manuel Gimenez-Coronado, Colombes, and Jean Cosyns, Maule, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 19, 1981, Ser. No. 235,799
Claims priority, application France, Feb. 19, 1980, 80 03646
Int. Cl.[3] C10G 23/02
U.S. Cl. 208—210 12 Claims



1. A process for lowering the sulfur or sulfur compounds content of a catalytic cracking or steam cracking gasoline boiling between 30° C. and 220° C., without substantially decreasing its octane number, comprising

(1) fractionating said gasoline into (a) a light gasoline fraction boiling between the initial boiling point of said gasoline and a final boiling temperature T° C. comprised between 75° and 185° C., and (b) a heavy gasoline fraction boiling above T-20° C. and, in major part above T° C.;

(2) admixing said heavy gasoline fraction with a hydrogen-containing gas;

(3) subjecting the resultant mixture to complete vaporization;

(4) feeding the resultant vaporized mixture to a hydrodesulfurization zone, said hydrodesulfurization zone containing (a) at least one bed of at least one selective catalyst containing (i) a non-acidic carrier and (ii) at least one pair of metals selected from the group consisting of cobalt and molybdenum, cobalt and tungsten, nickel and molybdenum, and nickel and tungsten, the total metal content of said selective catalyst, expressed as oxides, being from 2 to 30% with respect to the total weight of the selective catalyst, the atomic ratio

$$R = \frac{\text{cobalt}}{\text{cobalt} + (\text{molybdenum or tungsten})} \text{ or}$$

$$\frac{\text{nickel}}{\text{nickel} + (\text{molybdenum or tungsten})}, \text{ being}$$

from 0.55 to 0.90, and (b) at least one bed of a second hydrodesulfurization catalyst, said second catalyst containing cobalt and at least one additional metal, being a Group VIII, VII or VI metal, wherein the atomic ratio

$$R' = \frac{\text{cobalt}}{\text{cobalt} + \text{additional metal}}$$

is lower than 0.55, the proportion by volume of the selective catalyst being from 5 to 90% with respect to the combined volumes of said selective catalyst and said second catalyst, said vaporized mixture being fed sequentially through the selective catalyst bed and then through the second catalyst bed;

(5) fractionating the hydrodesulfurization effluent and sepa-

rately recovering a hydrogen-containing gas, and a hydrocarbon fraction distilling in the gasoline range; and

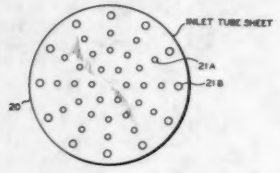
(6) recombining the resultant hydrocarbon fraction boiling in the gasoline range with the light fraction from step (1), thereby producing a desulfurized gasoline having substantially the same octane number as said catalytic cracking or steam cracking gasoline.

4,397,740

METHOD AND APPARATUS FOR COOLING THERMALLY CRACKED HYDROCARBON GASES

Stephen L. Koontz, Angleton, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 30, 1982, Ser. No. 429,717
Int. Cl.[3] F28F *19/00*; C07C *4/04*
U.S. Cl. 208—482 13 Claims



6. A method of cracking hydrocarbons to produce a gaseous cracked product with a minimum of coke formation during quenching or cooling which comprises cracking a hydrocarbon feed at an elevated temperature to produce a gaseous cracked product comprising olefins and coke-forming hydrocarbons, cooling the gaseous cracked product by passing it through a multi-tubular transfer line exchanger in indirect heat exchange relationship with a heat exchange fluid wherein the tubular flow paths positioned in the central or core portion of said transfer line exchanger are of smaller cross-section area than the outer flow paths arranged in an annular pattern around the tubular flow paths in the central portion of the exchanger so that the rate of flow of gaseous cracked product through all flow paths is about the same, thereby minimizing build-up of coke in the transfer line exchanger.

11. A system for cracking hydrocarbons and cooling the cracked effluent with minimum coke deposition in a multi-tubular indirect quench-cooling heat exchanger which comprises:

(a) a furnace for cracking a hydrocarbon feed, said furnace having an inlet pipe for entrance of the hydrocarbon feed to the furnacre and an outlet pipe for removal of gaseous cracked product,

(b) a conduit means connected to said outlet pipe and in open communication with the inlet of a multi-tubular shell-tube indirect heat exchanger,

(c) inlet conduit means and outlet conduit means connected to the shell of said heat exchanger for introduction and withdrawal of heat exchange fluid surrounding the tubes within said heat exchanger,

(d) an outlet pipe connected to said heat exchanger for withdrawal of cooled gaseous product, and

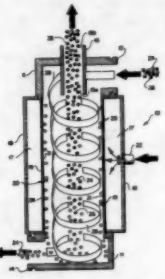
(e) an inlet tube sheet and an outlet tube sheet positioned within said heat exchanger with each tube sheet being connected to a plurality of tubes for passage of gaseous product from said furnace through said heat exchanger in indirect heat exchange relationship with heat exchange fluid in the shell side of said heat exchanger, said tubes being so-sized that the rate of flow of gaseous product throughout each of the tubes is substantially equal and so-arranged that tubes of smaller diameter are positioned within a central portion of said heat exchanger and tubes of larger diameter are positioned in annular section surrounding the tubes in the central portion with the proviso that the total number of tubes in said central portion comprises about 65 to about 85 percent of the total tubes and the number of tubes in the annular section comprises about 35 to about 15 percent of the total number of tubes.

4,397,741

APPARATUS AND METHOD FOR SEPARATING PARTICLES FROM A FLUID SUSPENSION

Jan D. Miller, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Continuation-in-part of Ser. No. 182,524, Aug. 29, 1980, and a continuation-in-part of Ser. No. 94,521, Nov. 15, 1979, Pat. No. 4,279,743. This application Nov. 20, 1981, Ser. No. 323,336
Int. Cl.[3] B03D *1/24*
U.S. Cl. 209—170 15 Claims



1. An apparatus for separating particles from a particulate suspension by flotation in a centrifugal field, comprising:

a generally vertically oriented vessel having a generally cylindrical configuration;

an inlet at the upper end of the vessel for introducing a particulate suspension under pressure into the vessel in a generally tangential fashion;

an outlet at the lower end of the vessel for directing fluid discharge from said particulate suspension out of the vessel in a generally tangential fashion, said inlet and outlet directing fluid flow so as to create a forced vortex in the vessel, said forced vortex forming a centrifugal field; and

means for introducing air into said particulate suspension, the air forming small bubbles which separate the particles from the particulate suspension by flotation in the centrifugal field.

4,397,742

COMPOSITION AND METHOD COMBINING FLUIDIZED BED RESIDUE WITH SCRUBBER SLUDGE

L. John Minnick, P.O. Box 271, Plymouth Meeting, Pa. 19462

Continuation of Ser. No. 50,336, Jun. 20, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,679
Int. Cl.[3] C02F *11/14*
U.S. Cl. 210—716 30 Claims

1. In a method of treating sludge removed from a gas scrubbing apparatus of the type adapted to reduce SO_x content in the treated gas, wherein x is 2 or 3, the improvement which comprises:

a. collecting residue from a fluidized combustion bed of the type wherein lime or limestone particles are suspended in a fluidized medium, and wherein carbonaceous fuel is subjected to combustion in a combustion bed operated at a temperature below about 1600° F. proximate said fluidized medium to capture therein a substantial amount of the SO_x which is generated upon combustion of said carbonaceous fuel, thereby producing a fluidized bed combustion residue comprising mostly crystalline compounds in contrast to amorphous compounds produced in conventional high temperature combustion processes;

b. forming an aqueous slurry with said collected fluidized bed residue with mechanical agitation to produce lime contained in an aqueous suspension and a precipitate material containing calcium sulfate anhydrite, and separating substantial amounts of the aqueous lime suspension from said precipitate material; and

c. mixing the precipitate material with waste scrubber sludge in a ratio of 1:1–1:2 by weight of precipitate to weight of sludge.

4,397,743

WATER TREATMENT METHOD

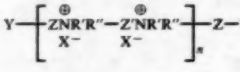
Harold A. Green, Havertown, Pa.; John J. Merianos, Middletown, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Division of Ser. No. 206,997, Nov. 17, 1980, which is a continuation-in-part of Ser. No. 29,778, Apr. 13, 1979, which is a continuation-in-part of Ser. No. 902,894, May 4, 1978, Pat. No. 4,190,644, which is a continuation-in-part of Ser. No. 744,617, Nov. 24, 1976, Pat. No. 4,089,977. This application Jun. 21, 1982, Ser. No. 390,287

Int. Cl.³ C02F *1/56*

U.S. Cl. 210—735 9 Claims

1. A method of causing flocculation of immiscible material in aqueous suspension which comprises adding to said aqueous suspension a flocculatingly effective amount of a compound or mixture of compounds having the formula:



wherein (I) R′ and R″ may be the same or different alkyl groups of from 1 to 18 carbon atoms, optionally substituted by from 1 to 2 hydroxyl groups or, (II) when taken together, will form a saturated or unsaturated ring of from 5 to 7 atoms, or (III) when taken together with N and an oxygen atom form the N-morpholino group; wherein Z is $-CH_2CH{=}CHCH_2-$ when Z′ is $-CH_2CHOHCH_2-$ or Z is $-CH_2CHOHCH_2-$ when Z′ is $-CH_2CH{=}CHCH_2-$; wherein X is a halogen of atomic weight greater than 30; wherein Y and Y′ may be either the same or different and may be either X or $-NR'R''$; and wherein n is an integer of from 2 to 20.

4,397,744

FILTER CLOTH SUSPENSION DEVICE FOR A FILTER PRESS

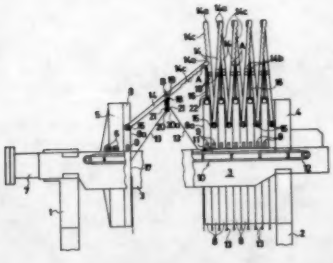
Hamazaki Haruo, Yao, Japan, assignor to Kurita Machinery Manufacturing Company, Limited, Osaka, Japan

Filed Jun. 26, 1981, Ser. No. 277,842

Claims priority, application Japan, Sep. 19, 1980, 55-131302

Int. Cl.³ B01D *25/12*

U.S. Cl. 210—225 10 Claims



1. A filter medium suspension device for a filter press having a plurality of filter plates defining opposite abuttable faces and opposite sides, and including first and second adjacent filter plates, said filter medium suspension device comprising a pair of filter medium suspension arms each having a first free end and a second end pivotally mounted at said second end thereof on opposite sides of said first filter plates, said arms extending at an angle upwardly from said second end, a filter medium hanger means suspended from said arms suspending a filter medium by an upper end of the filter medium; said filter medium disposed between said first and second adjacent filter plates, and a pair of filter medium suspension arm rest means each installed on said second filter plate adjacent the opposite sides thereof for supporting by sliding contact said first free ends of said filter medium suspension arms and for providing that the attitude of said filter medium suspension arms is changed as said first and second filter plates are displaced with respect to each other.

4,397,745

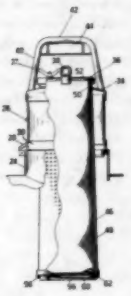
FILTER CARTRIDGE FOR SUMP CLEANER

Robert J. Troller, Madison, Wis., assignor to CECOR Incorporated, Verona, Wis.

Filed Apr. 5, 1982, Ser. No. 365,250

Int. Cl.³ B01D *29/14*

U.S. Cl. 210—237 10 Claims



6. In a sump cleaner having a tank (**10**), a vacuum pressure generator (**22**), and a filter (**48**), a filter cartridge (**26**) comprising:

cartridge unit mounting means (**30, 32, 34**) for mounting the filter cartridge (**26**) on top of the tank (**10**) of the sump cleaner;

an elongated, rigid, perforated filter shell (**46**) depending downwardly from the cartridge unit mounting means into the tank and having open top and bottom ends;

a top cover (**36**) closing the top of the filter shell (**46**);

an openable bottom door (**56**) closing the bottom end of the filter shell (**46**);

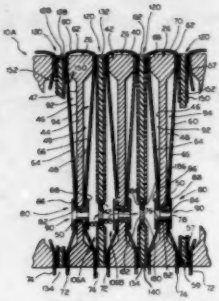
a flexible, removable filter sleeve (**48**) received inside the filter shell (**46**) to serve as a filter to separate solids from sump materials passing therethrough; and

a lifting fitting (**40**) mounted on the top of the cartridge unit mounting means so that the entire filter cartridge (**26**) can be lifted out of the sump cleaner so that the contents of the filter sleeve (**48**) can be easily emptied by opening the bottom door (**56**) to allow the contents of the filter sleeve (**48**) to fall out thereof, the filter shell (**46**) being tapered in size increasing toward its bottom end to facilitate material falling out of the filter sleeve (**48**) without jamming or bridging.

4,397,746
DIAPHRAGM TYPE CAKE COMPRESSOR FOR FILTER PRESSES

Russell F. Kratochvil, 13 S. Adams St., North Aurora, Ill. 60542

Filed Jan. 28, 1982, Ser. No. 343,446
Int. Cl.³ B01D *25/12*
U.S. Cl. 210—228 14 Claims



1. In a filter press that includes a plurality of recessed plates operably disposed between a fixed end plate and a movable end plate, with said plates being of like corresponding quadrilateral margin configuration, with said recessed plates each defining a slurry feed port, a filtrate outlet means, and a wash inlet means, with each said recessed plate being shaped to define a planar packing surfacing on either side of same and recessing between said packing surfacing and the slurry feed port that is in fluid flow communication with said filtrate outlet means, with filter sheeting material being applied over either side of each plate, and with the filter sheeting material of each plate on either side of same being coupled together through the slurry feed port, and means for closing said movable end plate and said recessed plates against the fixed plate with said recessed plate slurry feed ports aligned for supplying the slurry to the cake chamber formed by each pair of adjacent recessed plates about the slurry feed ports thereof for filtering the slurry through the filter sheeting material that is disposed on either side of the respective cake chambers for providing filtrate liquid flow to said filtrate outlet means,

the improvement comprising a cake compressor arrangement therefor comprising cake compressors interposed in alternating relation along the filter press with the respective recessed plates whereby one of said cake compressors is disposed across each cake chamber in bisecting relation thereto,

each of said cake compressors comprising:

a planar panel of quadrilateral marginal configuration having oppositely facing side faces on either side of same,

with each side face having a continuous marginal portion about the rim of the panel corresponding in configuration to the panel marginal configuration,

said panel marginal configuration conforming to said marginal configuration of said plates,

and with each said panel side face including its marginal portion being planar and coplanar with the plane of said panel,

said panel being formed at a site spaced from said face marginal portions thereof with a slurry feed through opening that is aligned with said slurry feed ports of the respective recessed plates,

said panel configuration defining corner portions at the upper and lower ends of the panel,

with at least one panel corner portion defining a filtrate passing aperture and with at least one other panel corner portion defining a wash passing aperture, said filtrate passing aperture and said wash passing aperture being aligned with said filtrate outlet means and said wash inlet means of said recessed plates, respectively,

a pair of elastomeric membranes for each said panel and each said membrane having a quadrilateral configuration approximating that of said panel whereby said membranes each having a marginal configuration thereabout that approximates the marginal configuration of the respective panel faces,

with one of said membranes for each said panel being disposed against one face of said panel and the other of said membranes for each said panel being disposed against the other face of said each panel,

and with said membranes of the respective membrane pairs being bonded to said panel thereof continuously about the respective marginal portions of said panel faces, respectively, to define a continuous static seal thereabout,

said membranes of said membrane pairs, respectively, being coupled together through and about their panel, said slurry feed through opening in sealed relation thereto to define a slurry feed port through said compressor having a continuous annular seal thereabout,

said membranes of the respective membrane pairs being bonded to said faces, respectively of said panel thereof, in sealed relation thereto about said panel apertures to define aperture seals for each membrane pair about the respective apertures of said panel thereof,

said membranes of said membrane pairs being apertured in alignment with the respective apertures of said panel thereof to define through the respective compressors a filtrate passing opening and a wash passing opening respectively aligned with said filtrate outlet means and said inlet means,

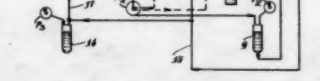
said membranes of each said membrane pair each defining a portion of same, between said annular seal and said static seal of the respective compressors to the exclusion of said aperture seals of the respective compressors, that is free to deflect laterally thereof and away from the panel face opposing same, to form a cake compressing diaphragm portion on either side of said panel of the respective compressors,

said panel of the respective compressors including means for supplying fluid under pressure between its said faces and said membrane diaphragm portions for inflating said membrane diaphragm portions into cake compressing relation with the cake when formed between same and the filter sheeting opposing same.

4,397,747
APPARATUS FOR PLASMA SEPARATION/EXCHANGE BY DOUBLE FILTRATION

Saburo Ikeda, Saiki, Japan, assignor to Kawasumi Laboratories, Inc., Tokyo and Kuraray Co., Ltd., Kurashiki, both of, Japan

Filed Jul. 14, 1981, Ser. No. 283,227
Claims priority, application Japan, Jul. 18, 1980, 55-98236
Int. Cl.³ B01D *13/00, 31/00*
U.S. Cl. 210—641 5 Claims



1. An apparatus for plasma separation and exchange utilizing double filtration comprising:

a first filter means for separating the blood withdrawn from a patient's body into a corpuscular fraction and a plasma fraction;

a second filter means for receiving the plasma fraction from said first filter means for separating said plasma fraction further into a high-molecular-weight fraction and a low-molecular-weight fraction containing albumin;

means to combine said corpuscular fraction from said first filter means with said low-molecular-weight fraction from said second filter means;

means for adding an additional fluid to the combined corpuscular and low-molecular-weight fractions;

a plasma reservoir between said first and second filter means for receiving said plasma fraction from said first filter means on its way to said second filter means, said reservoir having an opening which is vented to the atmosphere;

level sensing means for monitoring the plasma level within said plasma reservoir;

a first pump means controlled in association with said level sensing means for adjusting the flow rate of plasma between said first and second filter means for maintaining the plasma level in said reservoir within a predetermined range;

a second pump means for controlling, in association with said first pump means, the flow rate of said high-molecular-weight fraction exiting from said second filter means for maintaining the flow rate ratio between the plasma entering said second filter means and the high-molecular-weight fraction withdrawn therefrom at a predetermined value; and

a third pump means for controlling, in association with said second pump means, the flow rate of additional fluid provided by said adding means so that the amount of high-molecular-weight fraction withdrawn from said second filter means is equal to the amount of additional fluid added by said adding means.

4,397,748

TREATMENT OF SANITARY SEWER SYSTEMS

Perry A. Argabright, Larkspur, and John S. Rhudy, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 12, 1981, Ser. No. 320,447
Int. Cl.³ C02F 1/54; F17D 1/17
U.S. Cl. 210—733 **9 Claims**

1. A method of reducing the fluid flow friction loss of fluid waste materials in the conduits of sanitary sewer systems while at the same time maintaining the solid materials in the fluid in a flowable condition, comprising: providing an aqueous polymer solution obtained by (1) polymerizing a dilute aqueous solution containing about 1% to about 8%, by weight, of a water soluble monomer in the presence of a polymerization initiator, the monomer being characterized in that it contains at least one vinyl grouping wherein the vinyl group is an acrylyl vinyl, a vinyl cyanide, a styryl vinyl, or a water soluble salt thereof, the polymerization initiator being present in a concentration such that the resulting polymer will have an average molecular weight in the range of about 2 million to about 15 million, and a molecular weight distribution of the order of about 0.02 to about 0.22 as determined by the ratio σ/M wherein σ is the standard deviation of molecular weight of abundance of a molecular species present in the polymer and M is the average molecular weight of the polymer, to enable optimum reduction of the fluid flow friction loss to be achieved in the conduit of a sanitary sewer system; (2) adding a hydrolyzing agent to the dilute aqueous polymer solution in an amount sufficient to hydrolyze a portion only of the hydrolyzable functional groups comprising the polymer; and admixing about 1 to about 10,000 ppm of the resulting aqueous solution of the partially hydrolyzed polymer with the fluid waste materials in a conduit of a sewer system to provide optimum reduction of the fluid flow friction loss of the fluid waste materials in the conduit while at the same time maintaining the solids in the fluid waste materials in an easily flowable condition.

4,397,749

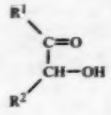
OIL-SOLUBLE METAL THIOLATE-SUCCINIMIDE COMPLEXES

Michael A. Shippey, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 29, 1982, Ser. No. 344,140
Int. Cl.³ C10M 1/38, 1/54
U.S. Cl. 252—42.7 **7 Claims**

1. A process for preparing an oil-soluble metal thiolate-succinimide complex which comprises reacting (a) an alkyl or alkenyl mono- or bis-succinimide with (b) an oil-insoluble metal thiolate prepared by reacting

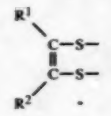
(1) an acyloin of the formula:



wherein R^1 and R^2 are the same or different and each is H, alkyl containing 1 to 30 carbon atoms, aryl containing 6 to 10 carbon atoms, alkaryl containing 7 to 30 carbon atoms, aralkyl containing 7 to 30 carbon atoms, or together R^1 and R^2 are alkylene and form a cyclic ring containing 4 to 6 carbon atoms which includes the carbon atoms to which they are attached, with phosphorus pentasulfide in an inert solvent at a temperature of from 25° C. to 180° C.;

wherein the mole ratio of acyloin to phosphorus pentasulfide is at least 1 to 2; and

(2) reacting the product from (1) with a reactive water-soluble, ionizable compound of a heavy metal in an aqueous solution whereby the final product (b) has a thiolato ligend of the formula:



to metal ratio of from 0.5:1 to 1.5:1, and wherein the weight ratio of (a) to (b) is in the range of from 2:1 to 10:1.

4,397,750

N-HYDROXYALKYL PYRROLIDINONE ESTERS AS DETERGENT COMPOSITIONS AND LUBRICANTS AND FUEL CONTAINING SAME

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 104,483, Dec. 17, 1979, abandoned. This application Aug. 7, 1981, Ser. No. 291,007
Int. Cl.³ C10M 1/32
U.S. Cl. 252—51.5 A **15 Claims**

1. A composition comprising a major proportion of a mineral oil of lubricating viscosity synthetic oil of lubricating viscosity, greases prepared from said oils of lubricating viscosity or normally liquid hydrocarbon fuel and a minor amount sufficient to impart detergent and dispersant properties thereto of a hydroxyalkylpyrrolidone ester or polymer thereof wherein said hydroxyalkylpyrrolidinone ester is obtained by reacting, in substantially equimolar amounts, a lactone with a hydroxyamine at a temperature of from about 110° to about 300° C. having the following general formula:

$NH_2R(OH)n$

where R is a hydrocarbyl group having from 1 to about 30 carbon atoms and n is from 1 to about 6 and thereafter esterifying the resulting hydroxyalkylpyrrolidinone product of said reaction with an alkenylsccinic anhydride, at a temperature of from about 110° to about 250° C., wherein the alkenyl group of said succinic anhydride has from about 8 to about 300 carbon atoms, in a molar ratio of from about 1:1 to about 1:10 of said anhydride to said hydroxyalkylpyrrolidinone product.

9. A compound prepared by (a) reacting under suitable reaction conditions at a temperature of from about 110°–300° C. in substantially equimolar amounts a lactone and a hydroxyamine having the following general formula:

$NH_2R(OH)n$

where R is an alkyl, cycloalkyl or aralkyl group having from 1 to about 30 carbon atoms and n is from 1 to about 6 and thereafter (b) esterifying the resultant hydroxyalkylpyrrolidinone product of reaction (a) at a temperature of from about 110°–250° C. with an alkenyl anhydride wherein the alkenyl group has from about 8 to about 300 carbon atoms in a molar ratio of from about 1:1 to about 1:10 of the pyrrolidinone anhydride to the anhydride.

15. A process of preparing a dispersant or detergent additive compound comprising (a) reacting under suitable conditions at a temperature of from about 110°–300° C. in substantially equimolar amounts a lactone with a hydroxyamine having the following general formula:

$NH_2R(OH)n$

where R is alkyl, cycloalkyl, aryl or arylkyl group having from 1 to about 30 carbon atoms and n is from 1 to about 6 and (b) thereafter esterifying the resulting hydroxyalkylpyrrolidinone product of (a) at a temperature of from about 110°–250° C. with an alkenyl anhydride, wherein the alkenyl group has from 8 to 300 carbon atoms in a molar ratio of from about 1:1 to about 1:10 of the pyrrolidinone to the anhydride.

4,397,751
MAGNETIC DISK COATINGS

Heidi L. Dickstein, and William H. Dickstein, both of Campbell, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1981, Ser. No. 260,440
Int. Cl.³ G11B 5/78
U.S. Cl. 252—62.54 6 Claims

1. A mixture for coating a magnetic recording member to produce a magnetic coating having magnetic particles in a binder system in a pigment volume concentration of up to 35, where pigment volume concentration is defined as the ratio of the volume of said magnetic particles to the sum of the volume of said binder system and the volume of said magnetic particles, comprising

said binder system including

a water-miscible solvent system comprising glycol ethyl ether, hydroxyethylacetate and diethyleneglycol-butylether,

an epoxy resin selected from a group of epoxy resins which are soluble in each component of said water-miscible solvent system,

a phenolic resin selected from a group of phenolic resins which are soluble in each component of said water-miscible solvent system, and

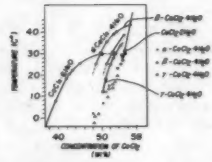
a titanate coupling agent for improving the bond of said magnetic particles to said resins and for catalyzing the cross-linking of said resins,

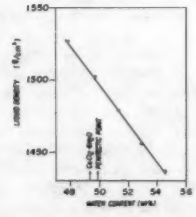
each of said components of said water-miscible solvent system being compatible with said titanate coupling agent.

4,397,752
HEAT STORAGE MATERIAL

Hiroshi Kimura, and Junjiro Kai, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1981, Ser. No. 295,147
Claims priority, application Japan, Aug. 21, 1980, 55-115450; May 7, 1981, 56-69215
Int. Cl.³ C09K 3/18
U.S. Cl. 252—70 6 Claims





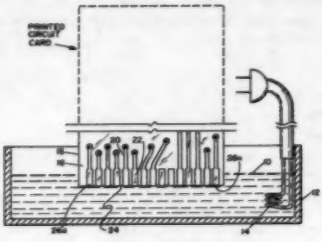
1. A heat storage material which comprises $CaCl_2$ hydrate having a water content at a molar ratio of more than 6.04 and less than 6.14 based on $CaCl_2$.

4,397,753

SOLDER STRIPPING SOLUTION

James J. Czaja, Maple Plain, Minn., assignor to Circuit Chemistry Corporation, Maple Plain, Minn.

Filed Sep. 20, 1982, Ser. No. 420,482
Int. Cl.³ C09K 13/08
U.S. Cl. 252—79.3 16 Claims



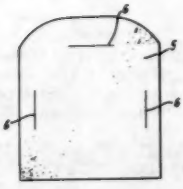
1. Solution for the removal of tin or tin-lead alloy solder from a copper or nickel base, said solution comprising:
(a) 20–150 g/l of a m-nitro substituted aromatic compound;
(b) 0.5–10 g/l of a thiourea selected from a group of thiourea per se, an alkyl thiourea or an aromatic thiourea;
(c) 0.1–50 percent by volume of an inorganic acid selected from a group including fluoboric acid, fluosilicic acid, sulfamic acid, or nitric acid; and,
(d) 0.1–50.0 g/l of a hydroxyphenol providing extended life to the stripping solution.

4,397,754

PERSONAL CLEANING PRODUCTS

Peter S. Collishaw, Nottingham, and Donald Bird, Accrington, both of England, assignors to Caligen Foam Limited, Accrington and W. E. Saxby (Nottingham) Limited, Nottingham, both of, England

Filed Sep. 24, 1981, Ser. No. 305,262
Claims priority, application United Kingdom, Sep. 27, 1980, 8031296
Int. Cl.³ C11D 17/04, 17/06
U.S. Cl. 252—91 26 Claims



1. A disposable personal cleaning product comprising a substrate consisting of a sheet of open celled foam structure from 1–5 mm thick having dispersed throughout its cross-section a detergent composition comprising a non-ionic alcohol ethoxylate and a fatty acid soap.

4,397,755

STABLE LIQUID DETERGENT SUSPENSIONS

John M. Brierley, Little Neston, and Melvin Scott, Great Sutton, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,498
Claims priority, application United Kingdom, Oct. 16, 1980, 8033467
Int. Cl.³ C11D 1/83, 3/14, 9/20, 17/08
U.S. Cl. 252—113 6 Claims

1. A liquid medium, capable per se of stably suspending under high extensional shear rates non-colloidal undissolved particulate material, comprising an aqueous medium in which is present:
(a) from 0.2 to 70% of non-colloidal undissolved particulate material;
(b) from 0.5 to 20% of anionic detergent material;
(c) from 0.5 to 25% of a water-soluble electrolyte; and
(d) from 0.001 to 0.15% of a hectorite clay,
all percentages being calculated on the final product.

4,397,756

METHOD AND COMPOSITION FOR REDUCTION OF FORMALDEHYDE EMISSION IN WOOD COMPOSITE PANELS

William F. Lehmann, Tacoma, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 10, 1981, Ser. No. 291,705
Int. Cl.³ C08L 61/24; C09J 5/00
U.S. Cl. 252—182 5 Claims

1. A composition of matter comprising 20–60% urea; 0.5–5% of a carbohydrate based material selected from the group of sugars, starches, water-soluble or water-dispersable cellulose derivatives, or mixtures thereof; 0.5–5% of an acidic salt effective as a thermosetting aminoplast resin curing agent, and 0–2% formaldehyde based on the amount of urea present and where the ratio of urea to carbohydrate based material is in the range of 10:1 to 40:1.

4,397,757

BLEACHING COMPOSITIONS HAVING QUARTERNARY AMMONIUM ACTIVATORS

Samuel C. Bright, and Dennis Postlethwaite, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

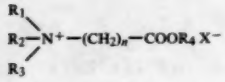
Division of Ser. No. 95,114, Nov. 16, 1979, abandoned, which is a continuation of Ser. No. 887,710, Mar. 17, 1978, abandoned,

which is a continuation of Ser. No. 256,522, May 24, 1972, abandoned. This application Dec. 15, 1980, Ser. No. 216,108

Int. Cl.³ C11D *3/395;* **D06L** *3/06;* **C11D** *7/54;* **C07C** *101/02*

U.S. Cl. 252—186.41 **15 Claims**

1. A bleaching formulation consisting essentially of a hydrogen-peroxide releasing material and a chemical compound of the formula



I

wherein n is 3 to about 25;

R_1 is a radical selected from the group consisting of alkyl, alkaryl, aryl, hydroxyalkyl and polyoxyalkylene;

R_2 and R_3 are each a radical selected from the group lower alkyl and hydroxyalkyl;

or two or more of R_1, R_2, or R_3 together form an alkyl substituted or unsubstituted nitrogen-containing heterocyclic ring system selected from the group consisting of pyridine, morpholine, and pyrrolidine;

R_4 is a phenyl group;

X is selected from the group of chlorine and bromine; and the total number of carbon atoms on the quaternary atom are less than about 28.

4,397,758

Patent Not Issued For This Number

4,397,759

FIRE RETARDANT FOR POLYOLEFINS

Henry Hancock, 5 Laurel Trail, Kinnelon, N.J. 07405

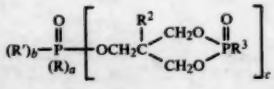
Continuation of Ser. No. 903,201, May 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 829,890, Sep. 1, 1977, Pat. No. 4,139,476. This application Jul. 25, 1979, Ser. No. 60,661

Int. Cl.³ C09K *3/28;* **C09D** *5/18*

U.S. Cl. 252—609 **5 Claims**

1. A flame retardant for a polyolefin comprising in combination in aqueous media;

a phosphonate ester having the following formula:



(I)

wherein a is 0, 1 or 2, b is 0, 1 or 2, c is 1, 2 or 3 and a+b+c is 3; R and R′ are the same or dissimilar and are alkyl, alkoxy, aryl, aryloxy, alkaryl, alkaryloxy, aralkyl, aryloxy-alkoxy, or aralkoxy, wherein the alkyl portion of these groups may contain hydroxyl but no halogen and the aryl portion may contain chlorine, bromine and hydroxyl groups; R^2 is alkyl, hydroxyalkyl, or aryl; R^3 is lower alkyl (C_1–CH_4); and a penetrant for the ester, said penetrant is a phosphate ester, and said phosphonate ester and phosphate ester being in aqueous solution, and whereby the penetrant and phosphonate ester penetrate from the aqueous medium into the polyolefin below the surface thereof.

4,397,760

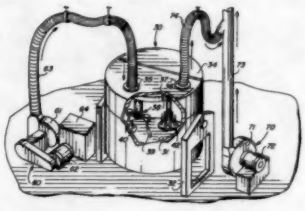
RAPID SAPONIFICATION PROCESS

Julian R. Story, Fountain Hills, and E. Gary Myers, Scottsdale, both of Ariz., assignors to Armour-Dial, Inc., Phoenix, Ariz.

Filed Aug. 10, 1981, Ser. No. 291,525

Int. Cl.³ C11D *13/10*

U.S. Cl. 252—370 **18 Claims**



1. A process for making soap granules from raw materials normally employed in soap manufacture including a fatty acid source and caustic comprising the steps of introducing said materials into an enclosed mixing vessel, causing said materials in said vessel to rotate in a generally circular path while simultaneously bringing said materials into contact with a rotating means mounted within said vessel, said means rapidly rotating in a direction counter to the initial direction of flow of said materials in said vessel whereby saponification takes place and soap granules are formed having a moisture content of less than about 20% by weight.

4,397,761

PHOSPHATE CONTAINING SUPPORT FOR VANADIUM CATALYST

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 31, 1980, Ser. No. 221,752

Int. Cl.³ B01J *23/22;* **C08F** *4/02*

U.S. Cl. 252—429 C **38 Claims**

1. A catalyst system comprising:

(a) a catalyst comprising an activated vanadium compound on a phosphate-containing support; and

(b) an organoaluminum cocatalyst of the formula R_nAlX_{3-n} wherein R is a 1 to 12 carbon atom alkyl radical, n is a number between 1 and 2 inclusive, and X is a halogen.

4,397,762

POLYMERIZATION CATALYST

Alexander Johnstone, Shenhousemuir, Scotland, assignor to BP Chemicals Limited, London, England

Filed Jan. 27, 1982, Ser. No. 343,249
Int. Cl.³ C08F 4/02, 4/64
U.S. Cl. 252—429 B 13 Claims

1. A supported Ziegler catalyst prepared by the following steps, carried out under anhydrous conditions:

(A) reacting a hydroxyl groups-containing support material comprising magnesium silicate or silica and magnesia with one or more organometallic compounds having the general formula $MR^1_aQ_{b-a}$ wherein M is a metal which is aluminium, boron, lithium, zinc or magnesium, R^1 is a hydrocarbyl group, Q is halogen or an oxyhydrocarbyl group, b is the valency of M and a is an integer from 1 to b,

(B) removing unreacted organometallic compound, if any, from the produced solid material,

(C) impregnating the solid material obtained from step B with one or more halogen-containing transition metal compounds wherein the transition metal (s) comprise titanium, vanadium or zirconium.

4,397,763

CATALYST AND PROCESS OF POLYMERIZATION OF ALPHA-MONOOLEFINS

M. Bruce Welch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 860,262, Dec. 13, 1977, Pat. No. 4,330,648. This application Feb. 12, 1982, Ser. No. 348,380
Int. Cl.³ C08F 4/64
U.S. Cl. 252—429 B 20 Claims

1. A catalyst system consisting essentially of (A) a milled admixture of effective ratios of a titanium halide, anhydrous magnesium or manganous chloride, optionally, with a Lewis base, and (B) effective ratios of at least one dihydrocarbylaluminum halide, at least one dihydrocarbylaluminum hydride, and an ether-alcohol, employing catalytically effective ratios of said (A):(B).

4,397,764

POLYMER-SUPPORTED ETHYLENE POLYMERIZATION CATALYST

Mark L. Shannon, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Mar. 26, 1982, Ser. No. 362,182
Int. Cl.³ C08F 4/64
U.S. Cl. 252—429 B 13 Claims

1. A catalyst system comprising

(a) a polymer supported titanium containing catalyst comprising

(1) a polymeric resin containing bound therein an amino borane reducing agent, and

(2) titanium tetrahalide; together with

(b) an organometallic co-catalyst, an organometallic hydride co-catalyst, an organometallic halide co-catalyst or mixtures of these.

4,397,765

PHOSPHATED ALUMINA OR ALUMINUM PHOSPHATE CHROMIUM CATALYST

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 221,878, Dec. 31, 1980, abandoned. This application May 5, 1982, Ser. No. 375,156
Int. Cl.³ C08F 4/02, 4/64
U.S. Cl. 252—430 33 Claims

1. A method of making a catalyst system comprising

(a) treating a separately prepared alumina gel with a phosphating agent to give a surface treatment and activating the thus treated gel in an oxidizing atmosphere at an elevated temperature, said gel either having a chromium compound coprecipitated therewith or having a chromium compound added thereto prior to said activating; and

(b) combining an organometal cocatalyst with the thus activated catalyst.

4,397,766

SOLUBILIZED CHROMIUM SALT IN PARTICULATE SUPPORT

Gil R. Hawley, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 103,686, Dec. 14, 1979, Pat. No. 4,333,860. This application Jan. 26, 1982, Ser. No. 342,874
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ B01J 31/12
U.S. Cl. 252—431 R 10 Claims

1. A process comprising:

contacting a chromium-containing salt, which is insoluble in nonaqueous solvents which do not easily rehydrate silica, with a solubilizing agent thus converting said salt to a chromium-containing complex having charged ions which is soluble in said nonaqueous solvents; and

impregnating a particulate silica-containing support with the thus solubilized chromium-containing complex dissolved in a nonaqueous solvent which does not easily rehydrate silica.

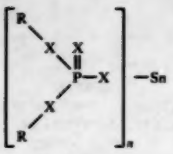
4,397,767

CATALYST POISONS PASSIVATED WITH TIN COMPOUNDS PLUS BOTH SULFUR AND PHOSPHORUS

John S. Roberts; Brent J. Bertus; Dwight L. McKay, and H. Wayne Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 12, 1982, Ser. No. 348,377
Int. Cl.³ B01J 31/12, 27/14
U.S. Cl. 252—431 P 11 Claims

1. A process for improving the metals resistance of a zeolite-containing cracking catalyst to have deposited thereon at least one contaminant selected from the group consisting of nickel, vanadium and iron from the cracking of a hydrocarbon feed without incorporating with said cracking catalyst antimony or a compound thereof, said process comprising contacting said zeolite-containing cracking catalyst with at least one treating agent composition represented by the formula



wherein R is hydrocarbyl having from 1 to 24 carbon atoms, wherein each X is selected from the group consisting of oxygen and sulfur and at least one X is sulfur, and wherein n is 2 to 4, so as to impart to said cracking catalyst a passivating amount of tin.

4,397,768

SUPPORTED CATALYST FOR THE PREPARATION OF PHTHALIC ANHYDRIDE

Klaus M. Felice, Caracas, Venezuela, assignor to Oxidaciones Organicas, C.A. "OXIDOR", Caracas, Venezuela

Continuation-in-part of Ser. No. 211,782, Dec. 1, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 325,772

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107320

Int. Cl.³ B01J *21/02, 31/02, 27/14, 35/00*

U.S. Cl. 252—432 **18 Claims**

1. A catalyst capable of producing phthalic anhydride from o-xylene in the substantial absence of sulfur compounds, consisting essentially of a substantially poreless, mechanically-stable, temperature-resistant, inert carrier to which there is adhered a catalytically active surface coating containing the following components in the following proportions, calculated as the oxides, in relation to one mole of vanadium pentoxide; potassium oxide, from about 0.02 to 0.05 mole; boron trioxide, from about 0.002 to 0.005 mole; antimony trioxide, from about 0.008 to 0.015 mole; and titanium dioxide, from about 10 to 15 moles.

4,397,769

OLEFIN POLYMERIZATION CATALYST

Max P. McDaniel; John A. Sanbrano, and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 2, 1981, Ser. No. 250,446

Int. Cl.³ B01J *21/06, 23/26*

U.S. Cl. 252—458 **12 Claims**

1. A process for preparing a supported chromium oxide polymerization catalyst comprising the steps of

(a) heating at a temperature within the range of about 300° to about 600° C. a catalyst comprising silica-supported chromium in a nonoxidizing atmosphere in the presence of a treating agent selected from formaldehyde and substances thermally decomposable to formaldehyde and

(b) heating the thus-treated catalyst in an oxidizing atmosphere at a temperature within the range of about 300° C. to about 600° C.

2. The process of claim 1 wherein the chromium treated in step (a) is present in the form of a compound selected from the group consisting of chromium oxide and compounds convertible to chromium oxide.

3. The process of claim 2 wherein the treating agent comprises paraformaldehyde.

6. The process of claim 2 wherein the silica-supported chromium further comprises titanium.

4,397,770

METHOD OF PREPARING A CATALYST

James A. Cairns, Wantage; James L. Woodhead, Didcot, and John D. F. Ramsay, Abingdon, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 18, 1976, Ser. No. 733,152

Claims priority, application United Kingdom, Oct. 22, 1975, 43435/75

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.³ B01J *21/04, 23/40*

U.S. Cl. 252—465 **17 Claims**

1. A method of preparing a catalyst comprising a substrate carrying refractory material which method comprises the steps of

(i) contacting a substrate with a dispersion comprising colloidal particles of refractory material in a liquid medium, which refractory material has been prepared by a vapour phase condensation method, and

(ii) drying and firing to produce a coating of the refractory material on the substrate.

4,397,771

OXIDATION CATALYSTS

Robert K. Grasselli, Chagrin Falls, and Dev D. Suresh, Warrensville Heights, both of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Continuation of Ser. No. 746,757, Dec. 2, 1976, abandoned, which is a division of Ser. No. 535,403, Jan. 13, 1975, abandoned. This application Oct. 29, 1981, Ser. No. 316,246

Int. Cl.³ B01J *23/16, 21/02, 27/14, 27/02*

U.S. Cl. 252—467 **7 Claims**

1. An oxidation catalyst having the formula

$A_aC_cD_dCr_eBi_fMo_{12}O_x$

wherein

A is an alkali metal Tl, Ag, Cu, Sn, W or mixtures thereof, wherein A contains at least alkali metal;

C is a Group IIA or Group IIB element, manganese or mixture thereof;

D is Ni, Co, P, As, Sb, Ge, B, or mixture thereof;

and wherein

a is 0–4;

c is 0.5 to 20;

d is 0–2;

e and f are 0.1–12, and

x is a number of oxygens required to satisfy the valence requirements of the other elements present.

said catalyst being free of indium, gallium, aluminum and rare earth metals.

4,397,772

CATALYST SUPPORTS AND FLUID TREATMENT DEVICES

Michael L. Noakes, Reading, and James A. Cairns, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 124,821, Feb. 26, 1980, abandoned, which is a continuation of Ser. No. 916,561, Jun. 19, 1978, abandoned. This application Dec. 11, 1980, Ser. No. 215,256

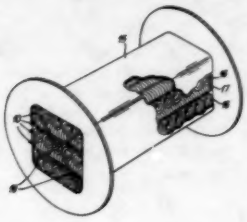
Claims priority, application United Kingdom, Jun. 20, 1977, 25746/77

Int. Cl.³ F01N *3/28;* **B01J** *8/00;* **B01D** *53/36*

U.S. Cl. 252—477 R **18 Claims**

13. A device for use in the treatment of a fluid by passing the fluid over a solid surface, which device comprises at least one component in the form of a helically wound coil of wire-form laid onto itself, or onto other such components, to form a fluid permeable body through which the fluid to be treated can flow in contact with the surfaces of the component or components, the wire at the periphery of part of any such coil defining open spaces small enough in relation to the shape and diameter of wire at the periphery of another part of that coil or at the

periphery of other coils, if present, to at least limit penetration, by intertangling therewith, of part of one component into the internal open spaces of said another part of the same component or of one component into the internal open spaces of another component; and a surface coating on the components



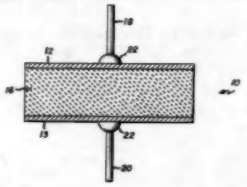
comprising catalytically active material, at least parts of such component being unrestrained from intertangling with another part of the same component or with other components, if present, but for prevention thereof by said intrinsic configurational properties of such component or components.

4,397,773

VARISTOR WITH TETRAGONAL ANTIMONY ZINC OXIDE ADDITIVE

John E. May, Skaneateles, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,314
Int. Cl.³ H01B 1/06
U.S. Cl. 252—518 5 Claims



1. An additive for reducing the varistor voltage and the leakage current of zinc oxide varistors consisting of particulate tetragonal-antimony-zinc-oxide of the form $ZnSb_2O_4$.

4,397,774

METHOD OF PREPARING RESISTANCE MATERIAL AND RESISTOR BODIES PRODUCED THEREWITH

Alexander H. Boonstra, and Cornelis A. H. A. Mutsaers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 950,642, Oct. 11, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 178,044
Int. Cl.³ H01B 1/06
U.S. Cl. 252—518 2 Claims

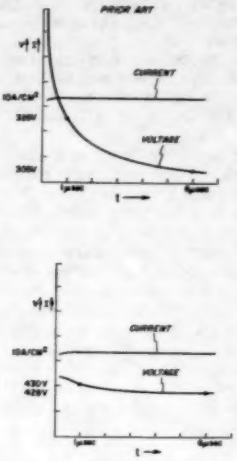
1. In the method of preparing a resistance material by firing in an oxygen containing atmosphere at least one metal oxide and an essentially inert binder, the improvement wherein said metal oxides have an average particle size of not more than 100 nm and have a maximum deviation of particle size varying from ±10% at a TCR level of the bulk material of 4000×10^{-6}.°C.$^{-1}$ to not more than ±40% at a TCR level of the bulk material of 1000×10^{-6}.°C.$^{-1}$, the maximum deviation in the TCR of the final fired resistance materials being $\pm50\times10^{-6}$.°C.$^{-1}$.

4,397,775

VARISTORS WITH CONTROLLABLE VOLTAGE VERSUS TIME RESPONSE

Lionel M. Levinson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 1, 1981, Ser. No. 269,225
Int. Cl.³ H01B 1/06
U.S. Cl. 252—518 9 Claims



1. A sintered ceramic, bismuth-free metal oxide varistor composition consisting essentially of between about 70 and 99.5 mole percent ZnO as a primary constituent, and finite quantities of additive oxides of barium, boron, aluminum, and at least one additive transition element oxide, said finite additive quantities in aggregate comprising between about 0.5 and 30 mole percent of said composition.

4,397,776

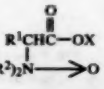
LIQUID DETERGENT COMPOSITIONS CONTAINING ALPHA-AMINE OXIDE SURFACTANTS

James F. Ward, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 17, 1981, Ser. No. 244,535
Int. Cl.³ C11D 3/06, 1/84
U.S. Cl. 252—527 15 Claims

1. A liquid detergent composition having a pH of from about 9.0 to about 13.0, comprising:

(a) from about 0.005% to about 40% by weight of an amine oxide surfactant of the formula



wherein R^1 is hydrogen or a C_1–C_{20} hydrocarbyl group; each R^2 is a C_1–C_{20} hydrocarbyl group or a C_2–C_3 alkylene oxide group containing from 1 to about 10 alkylene oxide units; and X is hydrogen or a water-soluble metal, ammonium or substituted ammonium cation; provided that the total number of carbon atoms in hydrocarbyl groups at the R^1 and R^2 substituents is from about 8 to about 36; and

(b) from about 0.001% to about 35% by weight of a heavy-

metal chelating agent selected from the group consisting of alkali-metal, ammonium and substituted ammonium polycarboxylates, aminopolycarboxylates, polyphosphonates, aminopolyphosphonates, and polyphosphates, and mixtures thereof.

4,397,777

HEAVY DUTY LAUNDRY DETERGENT

Joseph A. Yurko, Bayonne, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 766,655, Feb. 8, 1977, abandoned, which is a continuation of Ser. No. 505,626, Sep. 13, 1974, abandoned. This application Jul. 18, 1980, Ser. No. 170,987

Int. Cl.³ C11D *1/14, 3/12, 17/06*

U.S. Cl. 252—536 **3 Claims**

1. A heavy duty particulate laundry detergent composition comprising in weight percentages, 12% paraffin sulfonate wherein the paraffin alkyl group is from 14 to 20 carbons with an average of 15 carbons, 6% higher olefin sulfonate produced by sulfonating an alpha-olefin of 15 to 20 carbons with about one equivalent of diluted sulfur trioxide, neutralizing with excess sodium hydroxide and heating the alkaline mixture above 150° C. to open the sultone rings in the mixture, 25% polysilicate of the formula Na_2SiO_3 wherein the ratio Na_2O to SiO_2 is 1 to 2.5, 10% 4 A zeolite molecular sieve containing 2% moisture and having a mean particle diameter of 8.3 microns, 0.5% sodium carboxymethyl cellulose, 1% optical brightener, 0.5% perfume, 26.7% anhydrous sodium sulfate, 15% moisture and 3.3% other materials associated with paraffin and olefin sulfonates.

4,397,778

COPROCESSED NUCLEAR FUELS CONTAINING (U, PU) VALUES AS OXIDES, CARBIDES OR CARBONITRIDES

Milton H. Lloyd, Oak Ridge, Tenn. (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

Filed Jan. 9, 1981, Ser. No. 223,547

Int. Cl.³ G21C *19/46*

U.S. Cl. 252—627 **4 Claims**

1. A nuclear fuel processing method comprising the steps of:

stabilizing a product stream from a nuclear fuel reprocessing facility which stream contains both uranium and plutonium by maintaining a HNO_3 concentration in said stream in excess of 0.5 M to prevent hydrolysis of said metals;

concentrating the stabilized stream by vacuum distillation at a temperature in the range of about 25° C. to about 40° C. and a pressure in the range of about 10 Torr to about 40 Torr;

making the concentrated stream acid deficient by neutralization with ammonium hydroxide; and

feeding the acid deficient stream to a spherule-forming operation using an internal gelation process to produce sol-gel spherules.

4,397,779

PREPARATION OF XANTHINE TRACERS

Ernest V. Groman, Somerville, and Michael D. Cabelli, Waltham, both of Mass., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

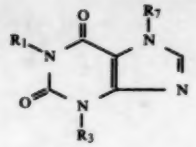
Division of Ser. No. 932,146, Aug. 9, 1978, Pat. No. 4,297,494. This application May 28, 1981, Ser. No. 267,952

Int. Cl.³ C07D *473/04*

U.S. Cl. 260—112.5 R **8 Claims**

1. The method of making a xanthene derivative which comprises

(a) providing an alkali metal salt of a compound having the structure



wherein at least one R_1, R_3 or R_7 is hydrogen, and, if not hydrogen, R_1 and R_7 are acetate or methyl and R_3 is methyl;

(b) reacting the salt with a lower alkyl ester of an ω-halogenated normal or branched chain alkyl acid ester having the structure

wherein R_5 is hydrocarbon; X is halogen; and B is lower alkyl of from 1 to about 7 carbon atoms;

(c) hydrolyzing the reaction product to form a free acid;

(d) forming a mixed anhydride by reacting the free acid with an activating agent; and

(e) condensing the mixed anhydride with an amino-substituted radioiodinated or radioiodinatable compound.

4,397,780

LEUCINE^{22}-CALCITONIN

Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,396

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 T **5 Claims**

5. A Leu-22 calcitonin selected from the group consisting of Leu-22 salmon calcitonin and Leu-22 eel calcitonin.

4,397,781

AZO DYES FROM 2-AMINO-3-NITRO-5-ACYLTHIOPHENE

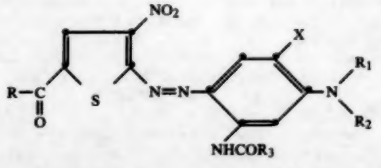
Gary T. Clark, and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,543

Int. Cl.³ C09B *29/00*

U.S. Cl. 260—152 **7 Claims**

1. A dye of the formula



wherein R is selected from alkyl, phenyl and phenyl substituted with 1-3 of alkyl, alkoxy, halogen or nitro; R_1 and R_2 are ach alkyl or one of which is also selected from hydrogen; R_3 is selected from hydrogen, cycloalkyl, alkyl, alkoxy, alkylamino, phenyl, phenyl substituted as for R above, and alkyl substituted with 1-3 of hydroxy, alkoxy, acyloxy, halogen, phenyl, phenoxy, or cyclohexyl; and X is hydrogen, alkyl, or alkoxy.

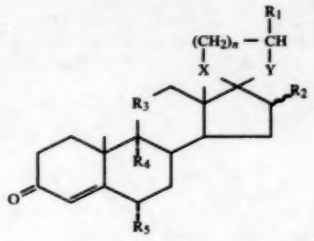
4,397,782

ANTIINFLAMMATORY 17-SPIROANDROSTENES

Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 28, 1982, Ser. No. 382,891
Int. Cl.³ C07J 71/00
U.S. Cl. 260—239.5 22 Claims

1. A steroid having the formula



or the 1,2-dehydro and 15,16-dehydro derivatives thereof, wherein

R_1 is hydrogen, alkyl, carboxyl, or alkoxycarbonyl;

R_2 is hydrogen, chlorine, bromine, fluorine, methyl, hydroxyl or a conventional hydrolyzable ester thereof, methoxy, or oxo;

R_3 is carbonyl or β-hydroxymethylene;

R_4 is hydrogen or fluorine;

R_5 is hydrogen, methyl or fluorine;

X and Y are the same or different, and each is S, O, NH, N—CH_3, SO or SO_2; and

n is 1, 2, 3, 4 or 5; with the proviso that X and Y are not both O.

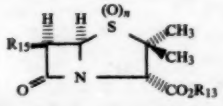
4,397,783

PROCESS FOR CONVERTING 6,6-DISUBSTITUTED PENICILLANIC ACID DERIVATIVES TO THE 6-β-CONGENERS

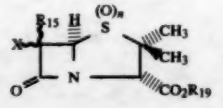
Michael S. Kellogg, Waterford, and Ernest S. Hamanaka, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 17,809, Mar. 5, 1979, abandoned. This application Nov. 23, 1979, Ser. No. 96,832
Int. Cl.³ C07D 499/04
U.S. Cl. 260—245.2 R 18 Claims

1. A proceess for the preparation of a compound selected from those of the formula



wherein R_{15} is selected from the group consisting of fluoro, chloro, bromo, iodo, alkoxy having from one to four carbon atoms and alkylthio having from one to four carbon atoms; n is an integer of from 0 to 2; and R_{13} is selected from the group consisting of hydrogen and ester-forming residues readily hydrolyzable in vivo which comprises reacting a compound of the formula



wherein X is selected from the group consisting of chloro, bromo and iodo; and R_{19} is selected from the group consisting of ester-forming residues readily hydrolyzable in vivo and conventional penicillin carboxy protecting groups, with an organotin monohydride at about 0°–110° C., followed by removal of R_{19} when it is a conventional penicillin carboxy protecting group, with the proviso that when said R_{19} is a conventional penicillin carboxy protecting group n is an integer of from 0 to 1.

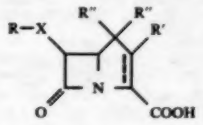
4,397,784

INHIBITORS OF TRANSPEPTIDASE

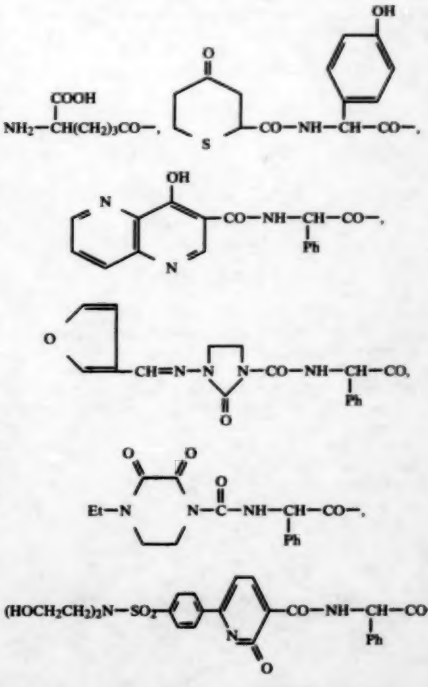
Daniel T. Chu, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 205,035, Nov. 7, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,808
Int. Cl.³ C07D 487/04
U.S. Cl. 260—245.2 T 6 Claims

1. A compound of the formula



wherein X=O or S; R represents H, loweralkyl, phenacetyl, phenoxyacetyl, cyanoacetyl, thenylacetyl, p-sulfophenacetyl, N-benzoylglycylphenylglycyl, a moiety of the formula



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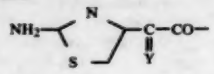


wherein Y is O or NOR", a mercaptoacetyl of the formula R^*SCH_2CO- wherein R^* is phenyl, 4-pyridyl, 2-chloro-2-butenyl, allyl or n-butyl, phenyl, phenylloweralkyl, substituted phenyl or substituted phenylloweralkyl, wherein substituted phenyl is a phenyl moiety substituted with one or more groups independently selected from hydroxy, loweralkoxy, amino, nitro, halo, loweralkyl or phenylloweralkyl; R' is hydrogen, loweralkoxy, loweralkoxyalkyl, loweralkyl, phenylthio or loweralkylmercapto; R" is hydrogen or loweralkyl; and the broken line represents an optional double bond, and acyloxymethyl esters thereof.

4,397,785

PREPARATION OF 3,3'5,5'-TETRATERTIARY BUTYL DIPHENOQUINONE

Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 27, 1981, Ser. No. 248,384
Int. Cl.³ C07C 97/18
U.S. Cl. 260—396 N **6 Claims**

1. A process for producing 3,3',5,5'-tetratertiary butyl diphenoquinone comprising contacting 2,6-ditertiary butyl phenol with a heterogeneous oxidative coupling catalyst in the presence of an oxygen-containing gas in a liquid reaction medium comprising methanol.

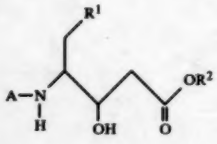
4,397,786

METHOD OF PREPARING STATINE AND DERIVATIVES

Ben E. Evans, and Kenneth E. Rittle, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 23, 1981, Ser. No. 324,207
Int. Cl.³ C09F 5/00, 7/00; C11C 3/00
U.S. Cl. 260—404 **7 Claims**

1. A method of preparing compounds of the formula:



(I)

wherein

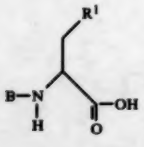
A is hydrogen; or a blocking group B conventionally employed in peptide synthesis;

R^1 is C_{3-6} alkyl; C_{3-7} cycloalkyl; phenyl; or phenyl monosubstituted with a member selected from the group consisting of methyl, trifluoromethyl, hydroxy, methoxy, fluoro, chloro, bromo, and iodo; and

R^2 is hydrogen; or C_{1-4} alkyl;

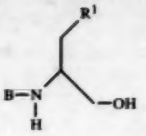
comprising the following steps:

(a) reducing a compound of the formula:



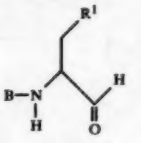
(II)

to form the corresponding carbinol of the formula:



(III)

(b) oxidizing the carbinol of Formula III with chromium trioxide and pyridine in methylene chloride to form the corresponding aldehyde of the formula:



(IV)

and;

(c) treating the aldehyde of Formula IV with an organometallic derivative of acetic acid or its C_{1-4} alkyl ester, followed by enantiomer separation, to form a compound of Formula I of the desired chirality where A=B; and, optionally, N-deprotecting to form the Formula I compound where A is hydrogen.

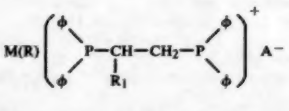
4,397,787

RHODIUM COMPLEXES CONTAINING CHIRAL PHOSPHINE LIGANDS USEFUL AS HYDROGENATION CATALYSTS

Dennis P. Riley, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 132,475, Mar. 19, 1980, Pat. No. 4,331,818. This application Jan. 18, 1982, Ser. No. 340,443
Int. Cl.³ C07F 15/00
U.S. Cl. 260—429 R **9 Claims**

1. A compound of the formula



wherein M is a transition metal, R is a chelating diene, R_1 is cyclohexyl, and A^- is a non-coordinating anion.

4,397,788

PROCESS FOR PRODUCING RHODIUM COMPOUNDS

Tadamori Sakakibara; Yoshihisa Matsushima; Yukio Nagashima; Nobukazu Okamoto; Katsumi Kaneko, all of Ooi; Yohio Ishii, Nagoya, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 73,664, Sep. 7, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 238,045
Claims priority, application Japan, Oct. 4, 1978, 53-121456; Oct. 4, 1978, 53-121457
Int. Cl.³ C07F 9/74, 9/92
U.S. Cl. 260—441 **1 Claim**

1. A process for the production of a rhodium compound having the general formula: $HRh(CO)(XR_3)_2(YR'_3)$ in which X is phosphorus, arsenic or antimony; Y is arsenic or antimony when X is phosphorus, Y is phosphorus or antimony when X is arsenic or Y is phosphorus, arsenic or antimony when X is antimony; R and R' are the same or different aryl groups;

which comprises contacting a complex represented by the general formula:

$$RhZ(CO)(XR_3)_2$$

in which Z is a chloride except when X and Y are both antimony, bromide or iodide anion with a ligand represented by the general formula:

$$YR'_3$$

X, Y, R and R' being as defined above, in a solvent, and adding a reducing agent comprising a hydride of a Group IIIA element at a temperature below room temperature, thereby reacting the mixture, and recovering said rhodium compound.

4,397,789

ALKYL-4-CYCLOOCTENYL CARBONATES AND USES THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES

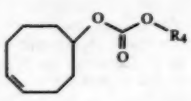
Richard M. Boden, Ocean, and Michael Licciardello, Farmingdale, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 318,427, Nov. 5, 1981. This application Aug. 19, 1982, Ser. No. 409,718

Int. Cl.³ C07C 69/96

U.S. Cl. 260—463 **3 Claims**

1. A 4-cyclooctenyl alkyl carbonate defined according to the structure:



wherein R'_4 represents an alkyl group selected from the group consisting of methyl and ethyl.

4,397,790

ISOPHOSPHINOLINONE DERIVATIVES

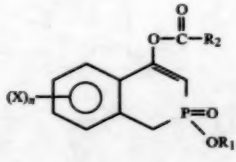
John A. Houbion, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 3, 1980, Ser. No. 212,381

Int. Cl.³ C07F 9/32; A01N 57/36

U.S. Cl. 260—936 **2 Claims**

1. A compound of the formula



(I)

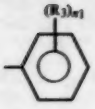
wherein

X is independently selected from the group consisting of bromine, chlorine, iodine, fluorine, hydroxy, linear alkyl having 1 to 4 carbon atoms, linear alkoxy having 1 to 4 carbon atoms, nitro, cyano and CF_3,

n is an integer from 1 to 4,

R_1 is alkyl having 1 to 4 carbon atoms,

R_2 is selected from the group consisting of alkenyl having 1 to 4 carbon atoms, haloalkyl having 1 to 4 carbon atoms,



wherein R_3 is independently selected from the group consisting of linear alkyl having 1 to 4 carbon atoms, CF_3, fluorine, chlorine, bromine, iodine and linear alkoxy having 1 to 4 carbon atoms, nitro and wherein n_1 is an integer from 1 to 5.

4,397,791

PROCESS FOR REACTING ALCOHOLS AND/OR PHENOLS WITH PHOSPHORUS PENTASULFIDE

Werner Krause; Jürgen Grosse, both of Hürth, and Werner Klose, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,613

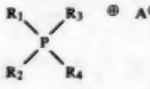
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011085

Int. Cl.³ C07F 9/165

U.S. Cl. 260—981 **2 Claims**

1. In the process for reacting an alcohol and/or phenol with phosphorus pentasulfide in the presence of a catalyst, the improvement which comprises using, as the catalyst, compounds selected from the group consisting of:

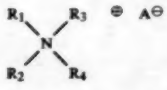
(a) phosphonium salts of the general formula



(I)

or

(b) ammonium salts of the general formula



(II)

or

(c) phosphine oxides of the general formula

(III)

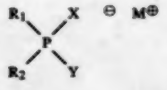
or

(d) phosphine sulfides of the general formula

(IV)

or

(e) phosphinic acid derivatives of the general formula



(V)

in which formulae I through V the substituents R_1, R_2, R_3, and R_4 each stand for identical or different alkyl-, aryl-, alkaryl- or aralkyl-groups having from 1 to 22 carbon atoms, A stands for an acid radical of a hydrohalic acid, sulfuric acid, nitric acid, acetic acid or dialkyldithiophosphoric acid and X and Y, respectively, stand for both oxygen and sulfur, and M stands for a monovalent metal or hydrogen; and using the said compounds in a proportion of 0.001 to 5 weight %, based on the alcohol or phenol.

4,397,792

THROTTLE VALVE LINKAGE FOR USE WITH MULTI-CARBURETOR ASSEMBLY

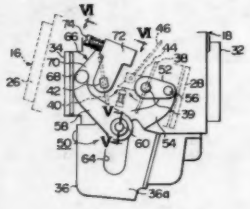
Toshifumi Usui, Katsuta; Takashige Kohno, Hitachi; Tadao Osawa, Katsuta, and Tokihiko Sakuma, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,429

Claims priority, application Japan, Dec. 4, 1980, 55-171816

Int. Cl.³ F02M *13/02*

U.S. Cl. 261—23 A **16 Claims**



1. A throttle valve linkage for use with a multi-carburetor assembly including at least one pair of carburetors disposed between engine cylinders arranged in pair, each carburetor being associated with one of said cylinders, said carburetors being arranged such that the direction of the intake air flow through one of said carburetors is opposite to the direction of the intake air flow through the other carburetor, said carburetors having throttle shafts extending substantially in parallel relationship to each other and being adapted to be rotated in the opposite directions by operation of an accelerator to thereby open and close the throttle valves of said carburetors, said throttle valve linkage being adapted to be installed between said carburetors and comprising:

first and second levers adapted to be rotated with said throttle shafts of said first and second carburetors, respectively;

first and second link members pivotally connected at their one ends to the free ends of said first and second levers, respectively;

a common pivot pin pivotally connecting the other ends of said first and second link members;

means defining a substantially elongated guide channel for slidably guiding said common pivot pin;

one of said throttle shafts being operatively connected to said accelerator;

the arrangement being such that the rotation of said one throttle shaft is transmitted to the other throttle shaft so that the direction of the rotation of said other throttle shaft is inverted.

4,397,793

CONFINED VORTEX COOLING TOWER

Gerald I. Stillman, 26 Claremont Ave., Maplewood, N.J. 07040, and Rudolf A. Wiley, 63 Brookview Ave., Delmar, N.Y. 12054

Continuation-in-part of Ser. No. 903,102, Jun. 8, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,063

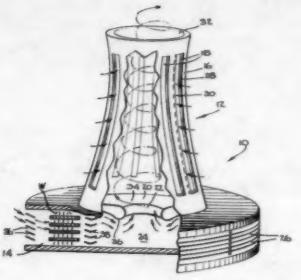
Int. Cl.³ F28C *1/04*

U.S. Cl. 261—30 **14 Claims**

1. In an effluent discharge apparatus having a chimney, defined by sidewalls and an open mouth, positioned above a lower cavity containing portion, the improvement comprising:

at least one slot within said chimney sidewalls extending vertically from above said cavity containing portion to below said mouth of said chimney, providing means for introducing gaseous fluid streams tangentially within and with respect to said walls of said chimney to create a vortex;

a floor dividing said cavity containing portion and said chimney and defining an upper bound of said cavity containing portion, said cavity containing portion having means to receive effluent constituents and means to receive effluent removal gaseous fluid streams wherein said effluent constituents are combined with said effluent removal gaseous fluid streams; and



an orifice, centrally disposed within said floor to convey said effluent containing gaseous fluid streams from said cavity containing portion to within said chimney to be exhausted from said chimney, the boundary of said orifice being configured to form a venturi shape.

4,397,794

ROTARY GAS WASHERS

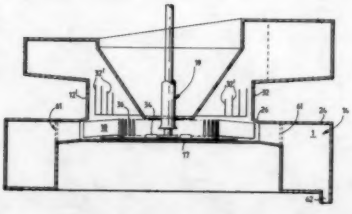
Claes W. Pilo, Avenue inston Churchill 247, BTE. 26, B-1180 Bruxelles, Belgium

Filed Dec. 7, 1981, Ser. No. 328,398

Claims priority, application United Kingdom, Dec. 11, 1980, 8039705

Int. Cl.³ B01D *47/16*

U.S. Cl. 261—79 A **7 Claims**



1. A rotary gas washer comprising a casing in which is arranged a droplet generator including a ring of radially extending blades or wings mounted for rotation about a vertical axis and means for distributing liquid over the surfaces of the wings or blades so that during rotation liquid is accelerated by the blades and flows to the peripheral edge of the surfaces from where it is shed to form streams of liquid droplets, a gas inlet scroll for directing the inlet gas to flow around the generator with a radially inward component of velocity and having a height adjacent the generator substantially equal to the axial height of the generator, and a gas outlet scroll having an inlet

directly above the inlet scroll and connected thereto by a vertical duct having approximately the same diameter as said ring of blades or wings, wherein the radially innermost portion of the peripheral wall of the inlet scroll is spaced from the periphery of the generator by a predetermined minimum distance to provide around the generator an annular reaction space within the scroll for interaction between the shower of droplets and the gas.

4,397,795

SEAL FOR ROTARY APPARATUS FOR GAS-LIQUID CONTACTING

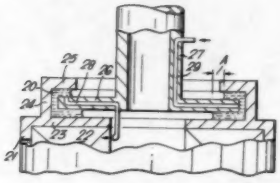
Joseph F. Jackson, Halifax, England, assignor to Thomas Broadbent & Sons Limited, West Yorkshire, England

Filed Jul. 20, 1981, Ser. No. 284,943

Claims priority, application United Kingdom, Aug. 1, 1980, 8025242

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—89 **3 Claims**



1. In apparatus for contacting a liquid with a gas of the kind including a casing, a hollow rotary member within the casing, a stationary liquid inlet in communication with the interior of the rotary member, a stationary liquid outlet in communication with the casing, and a gas inlet and a gas outlet so disposed as to deliver and withdraw gas respectively from said apparatus, the arrangement being such that liquid flowing from the liquid inlet passes radially outwardly through the rotary member by centrifugal force during rotation of the rotary member and then to the liquid outlet and such that gas entering through the gas inlet passes through the rotary member in contact with the liquid and then to the gas outlet: an improved liquid seal assembly in the casing for preventing gas entering the gas inlet from bypassing the rotary member and flowing directly into said gas outlet, said seal assembly including means defining an annular liquid chamber coaxial with respect to the axis of rotation of the rotatable member and rotatable with the member so that liquid is held therein by centrifugal force during rotation, a disc-shaped gas barrier projecting into said chamber and dividing the chamber into a first leg which communicates with said casing and a second leg which communicates with the interior of said rotary member, and a conduit having an open end in communication with that leg of said annular liquid chamber which is on the gas inlet side of the gas barrier at a location spaced from the axis of rotation a distance slightly less than the radially outermost point of said barrier, said conduit having a second open end disposed outside said sealing chamber.

4,397,796

METHOD OF MANUFACTURING AN ANISOTROPIC OXIDIC PERMANENT MAGNET

Frederik K. Lotgering, and Petrus H. G. M. Vromans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 18, 1981, Ser. No. 264,735

Claims priority, application Netherlands, May 23, 1980, 8002990

Int. Cl.³ H01F *1/10, 41/02*

U.S. Cl. 264—24 **4 Claims**

1. A method of manufacturing an anisotropic oxidic permanent magnet having a hexagonal crystal structure and uniaxial anisotropy, said method comprising the steps of:

providing one or more first compounds from the group consisting of iron oxide and iron compounds which form iron oxide upon heating;

providing one or more second compounds from the group consisting of barium oxide, strontium oxide, lead oxide, and compounds of barium, strontium, and lead which form the respective oxides upon heating and optionally calcium partially replacing, the barium, strontium, and lead

mixing the first and second compounds in proportions which will form a magnet having a W-ferrite phase having a composition defined by the formula $MeFe_2^{2+}Fe_{16}^{3+}O_{27}$, where Me is a metal from the second compound;

prefiring the mixture at a prefiring temperature in an oxygen-containing atmosphere having a partial oxygen pressure, the partial oxygen pressure and prefiring temperature being chosen to form the desired ferrite phase, said prefiring producing a prefired product having a W-ferrite phase of said formulation;

grinding the prefired product;

shaping the ground product in the presence of a magnetic field; and

sintering the shaped product at a temperature from 1160° to 1250° C. in a gas atmosphere having an oxygen concentration such that substantially no oxygen exchange occurs between the product and the gas atmosphere;

wherein a quantity of iron of from 0.05 to 0.5% by weight is added to the prefired product and the iron containing prefired product is oxidized prior to sintering at a temperature of at most 1150° C. so that the product to be sintered has a ferrous content corresponding to that of said W-ferrite phase.

4,397,797

METHOD FOR EXTRUSION COATING OF A PIPE WITH A FOAMED COVER LAYER HAVING THREE INTEGRALLY FORMED CELLULAR SUB-LAYERS

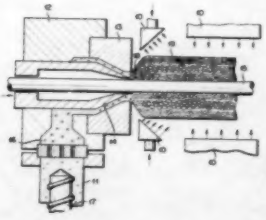
Akio Nojiri, Yokohama; Toshio Koreeda, Tokyo, and Masao Horiguch, Nishinomiya, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Furukawa Metals Co., Ltd., both of Tokyo, Japan

Filed Jul. 25, 1980, Ser. No. 172,422

Claims priority, application Japan, Jul. 31, 1979, 54-97516

Int. Cl.³ B29D *27/00*; B29F *3/10*

U.S. Cl. 264—45.5 **10 Claims**



1. A method for manufacturing a heat insulating pipe comprising a pipe having a foamed insulating layer around the outer surface of said pipe,

said foamed insulating layer having an expansion ratio of at least 4 and comprising three integrally formed sub-layers, said sub-layers including a cellular middle foamed sub-layer which is integral with a cellular inner foamed sub-layer and a cellular outer foamed sub-layer, said inner and outer sub-layer being on opposite sides of said middle sub-layer, said cellular inner foamed sub-layer being the innermost sub-layer with respect to said pipe and surrounding the outer surface of said pipe,

the cells of said inner and outer cellular sub-layers being smaller than the cells of said middle cellular sub-layer, the ratio μ_1/μ_2 of the cell dimensions of said cellular middle sub-layer being between 0.3 and 0.9, wherein μ_1 is the average cell dimension measured in the radial direction of said pipe and μ_2 is the average cell dimension measured in the axial direction of said pipe;

the method for producing said 3 sub-layered foamed insulating layer comprising:

passing a pipe heated to a temperature of between 60° C. and 120° C. through the nipple of a cross-head die and simultaneously extruding a mixture of a propylene-ethylene block polymer having an ethylene content of between 1 and 20% by weight and a Melt Index of between 0.1 and 4 together with a foaming agent over the outer surface of said pipe to cause said mixture to expand and form said 3 sub-layered foamed insulating layer on said pipe,

the relationship between the overall thickness t of the 3 sub-layered foamed insulating layer, the expansion ratio M of the 3 sub-layered foamed insulating layer, and the die-nipple distance d of the cross-head die being

$$d = K\frac{t}{\sqrt[3]{M}}$$

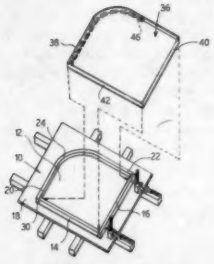
wherein K = 0.75 to 0.20.

4,397,798

METHOD OF FORMING LAMINATED FOAM COUNTER AND TABLE TOPS

Bruce D. Parten, Greenbrier, Ark., assignor to Polyvend Inc., Conway, Ark.

Filed Nov. 7, 1980, Ser. No. 204,748
Int. Cl.³ B29D 27/04
U.S. Cl. 264—46.5 **10 Claims**



1. A method of forming laminated articles of a selected shape with a selected laminated surface material using a preformed, openable, mold having at least two parts comprising the steps of:

taping the pieces of the selected surface material together by applying tape on exterior surfaces thereof across adjacent edges of different pieces of surface material to prevent leakage of the expandable foam material therebetween while the expandable material is expanding and applying pressure to the surface material;

placing the exteriorly taped surface material in the mold cavity of the first mold part;

applying a first layer of mixed expandable foam material to at least a part of an interior surface of one piece of selected surface material within the first mold part;

positioning the reinforcing member upon the first layer of mixed expandable foam;

applying a second layer of mixed expandable foam over at least a portion of the reinforcing member;

applying a layer of backing surface material over the second layer of expandable material in the first mold part before the mold is closed;

closing the mold;

clamping the mold closed for a selected time such that the expandable foam material fully expands throughout the mold, solidifies, cures and bonds to the interior surfaces of the selected surface material due to the pressure exerted by the expandable foam material on the interior surfaces of the selected surface material; and

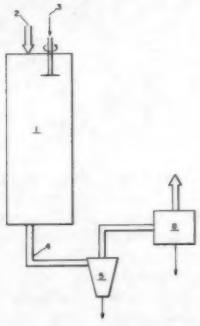
opening the mold and removing the completed, laminated article.

4,397,799

PROCESS FOR DRYING AND EXPANDING MICROSPHERES

Anders T. Edgren, Sundsvall, and Lars-Olof Svedberg, Kvissleby, both of Sweden, assignors to KemaNord AB, Stockholm, Sweden

Filed Dec. 18, 1981, Ser. No. 332,195
Claims priority, application Sweden, Jan. 14, 1981, 8100181
Int. Cl.³ B29D 27/00
U.S. Cl. 264—53 **13 Claims**



1. A process for drying and expanding microspheres having thermoplastic shells encapsulating a blowing agent, comprising the steps of

(a) providing a dispersion of the unexpanded microspheres, in sizes between 1 μm and 1 mm, in a volatile liquid that is inert to and a non-solvent for the thermoplastic microspheres,

(b) atomizing the dispersion having an amount up to 50% of the unexpanded microspheres in a stream of hot, inert gas having a temperature sufficient to:

(i) in a first stage said volatile liquid is vaporized and

(ii) in a second stage the microspheres are expanded by evaporation of the blowing agent at a temperature which initiates expansion of the microspheres,

(c) feeding the gas stream containing the expanded microspheres to a separator for the microspheres, and

(d) collecting from the separator of a product of dry, free-flowing and discrete microsphere particles.

4,397,800

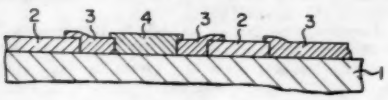
CERAMIC BODY HAVING A METALLIZED LAYER

Go Suzuki, Nagoya, and Kazuo Michishita, Fujiyoshida, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Division of Ser. No. 48,455, Jun. 14, 1979. This application Mar. 11, 1981, Ser. No. 242,665
Claims priority, application Japan, Jun. 17, 1978, 53-73430
Int. Cl.³ H01G 1/01
U.S. Cl. 264—61 **4 Claims**

1. A process for producing a ceramic body having a metallized layer which comprises tape-casting a ceramic slurry to form a ceramic green sheet, screen printing and drying a plurality of metallizing paste layers comprising one or more of a

high melting point metal or alloy unmelted at a firing temperature of the ceramic substrate and containing, based on 100 parts by weight of metal or alloy, 0.5 to 25 parts by weight of niobium, 0.5 to 10 parts by weight of yttrium, 0.5 to 10 parts by weight of tantalum, 0.5 to 25 parts by weight of a mixture of niobium and yttrium, 0.5 to 25 parts by weight of a mixture of yttrium and tantalum, 0.5 to 25 parts by weight of a mixture of niobium and tantalum, 0.5 to 25 parts by weight of a mixture of niobium, yttrium and tantalum, 0.05 to 3 parts by weight of



nickel, 0.5 to 4 parts by weight of chromium or 0.05 to 3 parts by weight of a mixture of nickel and chromium; screen printing and drying insulating paste to separate, at least in part, said metallized layers from one another; and firing the composite so formed at a temperature of 1450° C. to 1600° C. in a reducing atmosphere; and thereafter screen printing and drying a noble metal or noble metal alloy paste on the metallized layer and firing the resulting composite at a temperature of 500° C. to 900° C. in an oxidative atmosphere.

4,397,801

METHOD FOR THE PRODUCTION OF CEMENTITIOUS COMPOSITIONS AND AGGREGATE DERIVATIVES FROM SAID COMPOSITIONS, AND CEMENTITIOUS COMPOSITIONS AND AGGREGATES PRODUCED THEREBY

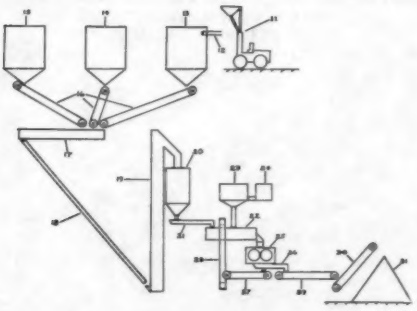
L. John Minnick, Box 271, Plymouth Meeting, Pa. 19462

Continuation-in-part of Ser. No. 50,506, Jun. 20, 1979, Pat. No. 4,250,134. This application Feb. 9, 1981, Ser. No. 232,852

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.³ B02C *18/28*

U.S. Cl. 264—140 **12 Claims**



1. In a method of preparing synthetic shaped cementitious compositions having high quality even without the addition of high energy binders such as portland cement, the steps which comprise:

(a) collecting and admixing the spent residue from a fluidized combustion bed of the type wherein limestone particles are suspended in a fluidized medium and sulfur oxides are captured and pulverized coal fly ash,

(b) adding controlled amounts of water to said residue-fly ash mixture,

(c) compacting and forming the mixture produced as a result of step (b) to the desired shape, and

(d) curing the shaped article, whereby the article, even if prepared without any such high energy binder, has a Los Angeles Rattler abrasion resistance of less than 50%.

4,397,802

METHOD FOR MAKING LINEAR MOTION ROLLING BEARING

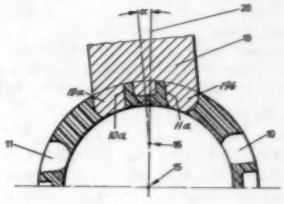
Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Division of Ser. No. 884,190, Mar. 7, 1978, Pat. No. 4,239,298. This application Aug. 5, 1980, Ser. No. 175,368

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711882

Int. Cl.³ B29C *1/02*

U.S. Cl. 264—219 **7 Claims**



1. In a method for molding a cage for a rolling bearing having pairs of axially extending guideways joined at their ends by semicircular reversing guideways, the improvement comprising molding said cage in a mold, and forming said pair of said axial guideways and reversing guideways with a core slidable generally radially outward from said mold.

4,397,803

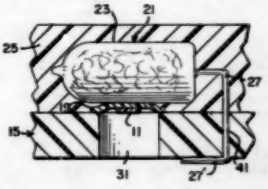
METHOD OF MAKING A PHOTOFLASH DEVICE HAVING A RADIANT ENERGY-ACTIVATED DISCONNECT SWITCH AS PART OF THE CIRCUITRY THEREOF

Harold H. Hall, Jr., Marblehead, and Andre C. Bouchard, Peabody, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 6, 1982, Ser. No. 337,346

Int. Cl.³ B29C *6/00*

U.S. Cl. 264—272.15 **8 Claims**



1. A method of making a photoflash device including a substrate member, lamp-firing circuitry, at least one radiant energy-activated disconnect switch, and at least one photoflash lamp for activating said disconnect switch upon ignition thereon, said lamp including a glass envelope, said method comprising:

positioning said radiant energy-activated disconnect switch on a first surface of said substrate member;

positioning said lamp-firing circuitry on said first surface of said substrate member;

electrically connecting said circuitry and said disconnect switch;

locating a thin, light-transmitting member over said disconnect switch to cover said switch;

securing said thin, light-transmitting member to said first surface of said substrate member about said switch such that said switch is able to move independently of said thin, light-transmitting member;

positioning said photoflash lamp on said substrate member such that said glass envelope is located above said disconnect switch and in contact with an upper surface of said thin, light-transmitting member, said light-transmitting member thereby providing a predetermined spacing between said lamp and said disconnect switch;

pouring a liquid casting resin material capable of forming a light-transmitting, solid polymer upon curing thereof over said glass envelope of said photoflash lamp such that said resin material flows about and substantially surrounds said envelope and engages said substrate member and said thin, light-transmitting member, said secured, light-transmitting member preventing contact between said switch and said liquid casting resin material; and

thereafter curing said resin material to form said light-transmitting polymer, said polymer bonded to said glass envelope, substrate, and thin, light-transmitting member.

4,397,804

METHOD FOR PRODUCING CONTAINERS FROM THERMOPLASTIC SHEET MATERIAL

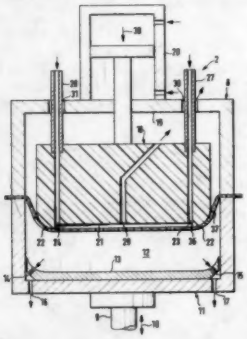
Emmerich Medwed, Wolfertschwenden, Fed. Rep. of Germany, assignor to Multivac Sepp Haggenmüller KG, Wolfertschwenden, Fed. Rep. of Germany

Filed Mar. 10, 1981, Ser. No. 242,356

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 8007086[U]

Int. Cl.³ B29C *17/04*

U.S. Cl. 264—292 **2 Claims**



1. A method of producing a container having corner portions from thermoplastic sheet material, comprising the steps of:

heating said sheet material to its plastic state;

clamping said heated sheet material on at least two opposed sides thereof;

advancing a molding die substantially normally towards said clamped heated sheet material, said molding die having a temperature below the temperature of said heated clamped sheet material and presenting a projecting peripheral portion and/or a recessed central portion directed towards said sheet material;

deforming said clamped heated sheet material by further advancing said molding die by a predetermined amount to shape said sheet and form said container; and, during said deforming, directing a stream of cooling air flow against said clamped heated sheet material from a region thereof adjacent to said peripheral portion of said molding die directed to the inner region of the said central portion to cool said sheet material adjacent said corner portions to be formed and progressively toward said central portion and thereby avoid excessive stretching and reduced wall thickness in said portions.

4,397,805

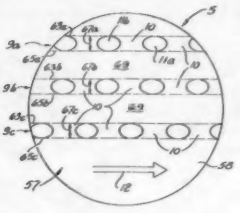
METHOD FOR MAKING A VIDEO DISC

John R. Holmes, Garden Grove, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Continuation of Ser. No. 31,206, Apr. 18, 1979, abandoned, which is a continuation of Ser. No. 937,221, Aug. 28, 1978, abandoned. This application Nov. 3, 1981, Ser. No. 317,975

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—328.14 **13 Claims**



1. A method for forming an optically readable information bearing structure, comprising the steps of:

processing a clear polymethylmethacrylate plastic to a melt flow rate of about 20 to about 23 grams per 10 minutes;

heating the plastic to a temperature falling within the range of 510° F. to 560° F.; and

using said heated plastic in an injection molding cycle.

4,397,806

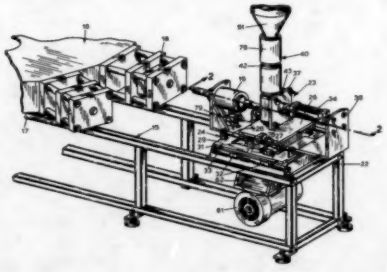
METHOD AND APPARATUS FOR MOLD INJECTION

Siebolt Hettinga, 800 University Ave., Des Moines, Iowa 50311

Filed Oct. 26, 1981, Ser. No. 315,351

Int. Cl.³ B29F *1/06, 1/08*

U.S. Cl. 264—328.14 **3 Claims**



1. The method of injecting an injection material into a mold comprising the steps of:

(a) introducing particulate injection material into one end of a confined path having an outlet projected laterally from the other end thereof,

(b) continuously advancing the material in said confined path toward and through said outlet for discharge into an injection nozzle unit,

(c) uniformly heating the material over the course of said path,

(d) moving the confined path in one direction relative to the

injection nozzle unit to move the outlet into the nozzle unit for injecting material therefrom into a mold, and then

(e) moving the confined path a predetermined distance in an opposite direction relative to the injection nozzle unit by the discharge of the continuously advancing material from said outlet into the injection nozzle unit.

4,397,807

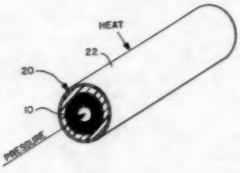
METHOD OF MAKING CRYOGENIC CABLE

George Bahder, Edison, N.J., and Mario Rabinowitz, Menlo Park, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 111,808, Jan. 14, 1980. This application Jul. 20, 1981, Ser. No. 285,428

Int. Cl.³ H01B 9/00

U.S. Cl. 264—512 **5 Claims**



1. In an electrical cable having an inner electrical conductor, a conductor shield surrounding said conductor, insulation surrounding said conductor shield, and an insulation shield surrounding said insulation, the method of treating said cable for use in low temperatures without introducing damaging stresses during cooldown in said insulation comprising the steps of

sealing one end of said cable,

inserting said cable inside a rigid cylinder having an inside diameter which is larger than the outside diameter of said insulation shield,

heating said rigid cylinder,

applying pressure to said cable whereby said insulation and insulation shield expand away from said inner conductor and into engagement with the inner surface of said rigid cylinder, and

cooling said rigid cylinder while maintaining pressure to said cable.

4,397,808

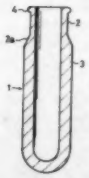
PRODUCTION OF A BOTTLE OF SATURATED POLYESTER RESIN

Yataro Yoshino; Akiho Ota, and Hiroaki Sugiura, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 82,698, Oct. 9, 1979. This application Mar. 19, 1981, Ser. No. 244,932

Int. Cl.³ B29C 17/07

U.S. Cl. 264—521 **2 Claims**



1. A method of producing a bottle of a saturated polyester resin by preparing a parison of a saturated polyester resin by an injection-molding process and by biaxially orienting said parison, comprising the steps of: injecting molten material of saturated polyester resin into a mold defined by a female mold member and a core mold member fitted therein, said core mold member being comprised of a first, mushroom head shaped part constituting the lower portion of the mold member, and a second part constituting the upper portion of said core mold member, said female mold member and said core mold member being arranged to form a parison having an open mouth portion and a larger diameter barrel portion; heating only the mouth portion of said parison to an orientable temperature; biaxially orienting said mouth portion by holding the bottom of said parison against said female mold member with said first part of said core mold member and simultaneously extracting said second part of said core mold member from the mouth of said parison to thereby widen and lengthen said mouth portion of the parison, so that said parison is biaxially oriented; and heating the barrel portion of said parison to a biaxially orientable temperature; and blow molding said parison in a mold in conjunctfion with a removable means being held within said parison.

4,397,809

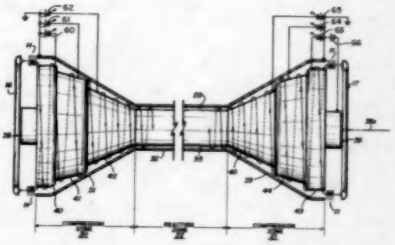
CHARGED PARTICLE MACHINE

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Energy Profiles, Inc., Newtown Square, Pa.

Division of Ser. No. 21,115, Mar. 16, 1979, abandoned. This application Oct. 28, 1980, Ser. No. 201,542

Int. Cl.³ G21B 1/00

U.S. Cl. 376—107 **2 Claims**



1. A charged particle machine which comprises:

(a) a pair of spaced apart sources of charged particle beams for producing two circumferential oppositely traveling beams;

(b) means to direct said beams along spiral paths having common axes and radii and thus pass through common space;

(c) coaxial cylindrical electrodes spaced apart to define a cylindrical annulus including said common space;

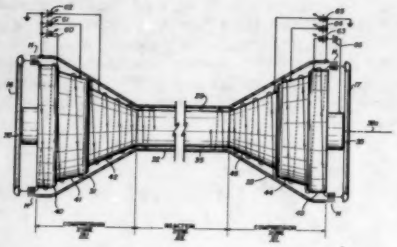
(d) means for application of voltages between said electrodes for establishing a D.C. radially directed electric field along said common axis and in said space to compress said beams and reduce the radii thereof and to oppose the centrifugal forces on said beams as they orbit in said space to maintain high particle density in said space in said cylindrical annulus to promote collisions between oppositely traveling ions in said beams; and

(e) means responsive to the effects of collisions between ions in said beams.

4,397,810
COMPRESSED BEAM DIRECTED PARTICLE NUCLEAR ENERGY GENERATOR

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Energy Profiles, Inc., Newtown Square, Pa.

Division of Ser. No. 21,115, Mar. 16, 1979, abandoned. This application Oct. 28, 1980, Ser. No. 201,544
Int. Cl.³ G21B 1/00
U.S. Cl. 376—107 52 Claims



1. The method of generating energy from fusion of atomic nuclei comprising:

(a) generating two oppositely directed beams of fusible ions which are forced to travel with opposite senses of rotation along coaxial paths;

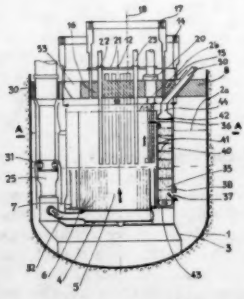
(b) imposing radial D.C. electric fields on said beams to compress the beams in spiral paths and reduce the radii of said paths to a common small radius in a reaction zone of circular symmetry at any given cross-section perpendicular to the axis of said paths and bounded by spaced apart outer and inner coaxial electrode walls for promoting collisions of ions in one beam with ions in the other beam, said D.C. electric fields being applied as the confining field in said reaction zone free of any applied magnetic field; and

(c) responding to energy production by the nuclear reactions resulting from said collisions.

4,397,811
NUCLEAR REACTOR WITH INTEGRAL HEAT EXCHANGERS

Leonardo Presciuttini, Sceaux, France, assignor to Novatome, Le Plessis Robinson, France

Filed Aug. 10, 1981, Ser. No. 291,678
Claims priority, applicatior France, Sep. 19, 1980, 80 20180
Int. Cl.³ G21C 15/00
U.S. Cl. 376—405 4 Claims



1. Nuclear reactor having integral heat exchangers comprising, in a vessel (1) containing liquid sodium, constituting the primary circuit in which the core (5) of said reactor is immersed, said core comprising fuel assemblies (6), supported by a horizontal support (3-4) bearing on the lower part of said vessel (1), at least two intermediate heat exchangers (35) which enable heating of secondary liquid sodium using the liquid sodium contained in said vessel (1) or primary liquid sodium, said heat exchangers being generally of an elongated shape and being each connected to a circuit for transporting said secondary liquid sodium between said intermediate heat excharger and a vapor generator for producing water vapor by employing the heat transported by said secondary liquid sodium, the vessel (1) of said reactor being closed by means of a horizontal slab (8) having openings one (10) of which, of large diameter and arranged above the core (5), is equipped with a platform (15) which is mounted so as to be rotatable about a vertical axis, referred to as the large rotating stopper, carrying the unit for control of said reactor and a device for handling the fuel assemblies, said intermediate heat exchangers (35) which are entirely enclosed within the vessel (1) being connected to said secondary sodium circuit by conduits (50) which pass through the slab closing of the reactor, said intermediate heat exchangers (35) which are arranged vertically, having their lower parts bearing on a support (3) of the core (5) at the periphery of the latter, said large rotating stopper (15) having an opening (53) of a size which is comparable to the dimensions of the cross-section of said intermediate heat exchangers (35), located at a distance from the axis of rotation of said rotating stopper, which makes it possible to bring this opening sequentially into vertical alignment with each one of the heat exchangers (35), by rotating said stopper (15).

4,397,812
ELECTROLESS NICKEL POLYALLOYS

Glenn O. Mallory, Jr., Inglewood, Calif., assignor to Richardson Chemical Company, Des Plaines, Ill.

Continuation of Ser. No. 788,598, Apr. 8, 1977, abandoned, Division of Ser. No. 473,147, May 24, 1974. This application Apr. 11, 1979, Ser. No. 29,523
Int. Cl.³ C22C 19/03
U.S. Cl. 420—441 11 Claims

1. An electroless homogeneous polymetallic microcrystalline nickel alloy deposit consisting essentially of nickel, tin and one element selected from the group consisting of phosphorus and boron and a metal selected from the group consisting of tungsten and copper, said nickel component being present in an amount of from about 60 to about 95 weight percent, said tin being present in an amount of from at least about 0.2 to about 10 weight percent, said element when phosphorus being present in an amount of from at least about 4 to about 20 weight percent and when boron being present in an amount of from at least about 0.02 to about 5 weight percent, and said metal when tungsten being present in an amount of from at least about 0.1 to about 25 weight percent and when copper being present in an amount of from at least about 0.1 to about 39 weight percent.

4,397,813
APPARATUS FOR MANUFACTURING SINGLE CRYSTALS

Syoichi Washizuka; Jisaburo Ushizawa, both of Yokohama; Yoshihiro Kokubun, Inagi, and Tsuguo Fukuda, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 4, 1982, Ser. No. 336,708
Claims priority, application Japan, Jan. 17, 1981, 56-4596
Int. Cl.³ C30B 15/28
U.S. Cl. 422—109 2 Claims

1. An apparatus for manufacturing single crystals comprising:

first means for pulling a single crystal from a melt held in a vessel holding a melt and a liquid encapsulant;

second means for measuring a weight of the single crystal pulled by said first means;

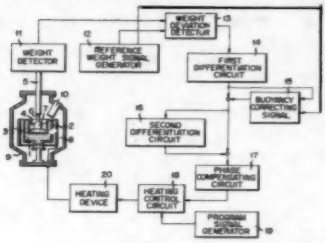
third means for generating a reference weight signal corresponding to a reference weight of the single crystal;

fourth means for generating a weight deviation signal by comparing a weight signal of the single crystal obtained from said second means with the reference weight signal obtained from said third means;

fifth means for differentiating the weight deviation signal obtained from said fourth means to provide a differentiation output signal;

sixth means for receiving the reference weight signal from said third means and the differentiation output signal from said fifth means, for converting a buoyancy of said liquid encapsulant influencing the single crystal pulled into a weight/time signal corresponding to the buoyancy, and for generating a buoyancy correction signal;

seventh means for receiving the differentiation output signal



from said fifth means and the buoyancy correction signal from said sixth means, for subtracting the buoyancy correction signal from the differentiation output signal, and for generating a signal corresponding to a true diameter fluctuation of the single crystal;

eighth means for differentiating the signal from said seventh means to generate a differentiation output signal;

ninth means for adding the differentiation output signal from said eighth means and the signal from said seventh means;

tenth means for phase-compensating a signal obtained from said ninth means to generate a phase-compensated signal to make a thermal response of the melt early;

eleventh means for receiving the phase-compensated signal from said tenth means and generating a heating control signal for the melt; and

twelfth means for heating the melt in response to the heating control signal from said eleventh means.

4,397,814

APPARATUS FOR PROVIDING OVERRIDING PRESSURE IN HEAT PROCESSING SEALED CONTAINERS

Andrea Darecchio, Parma, Italy, assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 161,085, Jun. 19, 1980, Pat. No. 4,341,734. This application Apr. 26, 1982, Ser. No. 371,855

Int. Cl.³ A61L 2/06; A23L 3/08

U.S. Cl. 422—111 **6 Claims**

1. A system for heat processing sealed containers having a head-space and first liquid therein which vaporizes during processing, the containers being of the type capable of maintaining an internal pressure that is different than the pressure acting on the exterior of the containers, comprising;

a sealed heat treatment chamber adapted to receive a plurality of containers,

an evaporator for heating and vaporizing a processing liquid for providing the vapors to the sealed chamber at the processing temperature,

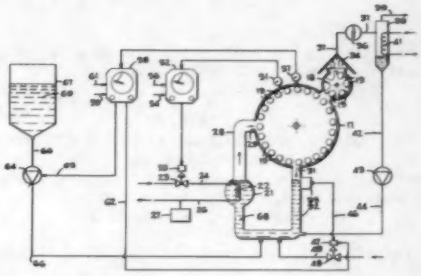
control means including a pressure sensor communicating with the heat treatment chamber for providing a pressure indicative output,

means for storing a quantity of a second liquid having a higher vapor pressure than the first liquid, and

means responsive to said pressure indicative output for controlling the flow of said second liquid between said means for storing and the evaporator for changing the proportion of the second liquid in the processing liquid so that a higher overriding pressure is provided in the treatment chamber than the pressure generated within the sealed containers.

5. A system for heat processing sealed containers having a head-space and a first liquid therein which vaporizes during processing, the containers being of the type capable of maintaining an internal pressure that is different than the pressure acting on the exterior of the containers, comprising;

a sealed heat treatment chamber adapted to receive a plurality of the containers,



an evaporator for vaporizing a processing liquid and for providing the vapors to the sealed chamber at the processing temperature,

control means including a temperature sensor communicating with the heat treatment chamber for providing a temperature indicative output,

means for storing a quantity of a second liquid having a higher vapor pressure than the first liquid, and

means responsive to said temperature indicative output for controlling the flow of said second liquid between said means for storing and the evaporator so that an overriding pressure is provided in the treatment chamber that is higher than the pressure generated within the sealed containers.

4,397,815

APPARATUS FOR THE DRY CROSSLINKING OF STRANDS OF ELASTOMERS

Harry Focht, Hemmingen, Fed. Rep. of Germany, assignor to Paul Troester Maschinenfabrik, Hanover, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,410

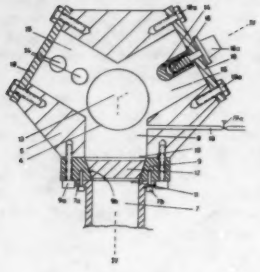
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3033012

Int. Cl.³ B01J 19/12

U.S. Cl. 422—128 **16 Claims**

1. Apparatus for the dry cross linking of a strand of elastomeric material, in particular in electric cable production as well as the production of multilayered profiles, comprising a plurality of aligned tubular sections with a hollow body between adjacent sections through which said strand is passed, said hollow body having a cavity of larger cross sectional dimensions than said tubular sections, UHF generating means connected by a UHF transmission line with said cavity to apply UHF energy to said strand as it passes through said hollow body, UHF coupling means between said transmission

line and said cavity, fluid pressure sealing means associated with said UHF coupling means, tuning means in said cavity



and means for supplying inert gas under pressure to the interior of said tubular sections and said hollow body.

4,397,816

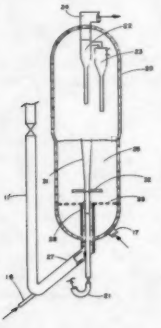
APPARATUS FOR REGENERATION OF SPENT CRACKING CATALYST

Edward C. Luckenbach, Mountainside, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 23, 1981, Ser. No. 323,765

Int. Cl.³ F27B *15/08*

U.S. Cl. 422—144 **6 Claims**



1. In apparatus embodying a spent, coked catalyst regenerator as used in combination with a hydrocarbon conversion reactor, each of which can contain a dense phase bed of fluidized catalyst, wherein hydrocarbons can be converted within said reactor at reaction conditions by contact with the dense phase bed of the said catalyst, the catalyst in said reactor becoming gradually deactivated by the formation of coke on the catalyst, and the catalyst transported from the reactor to said regenerator wherein coke is burned from the coked catalyst and reactivated by means which include

a spent, coked catalyst standpipe through which spent, coked catalyst is conveyed from the reactor to the catalyst regenerator,

a spent, coked catalyst riser operatively communicated with said spent, coked catalyst standpipe for receipt of coked catalyst therefrom, and into which air is injected to transport said catalyst, and introduce at least a portion of the air requirements into said dense phase fluidized catalyst bed of the spent, coked catalyst regenerator for regeneration of same by burning coke from the catalyst,

a regenerated catalyst standpipe outlet for recycle of regenerated catalyst via a regenerated catalyst riser to the reactor,

the improvement comprising

a conduit communicated with said spent, coked catalyst riser extending into the lower end of said regeneration vessel, the wall of the conduit surrounding said regenerated catalyst standpipe outlet forming an annulus through which spent, coked catalyst and air can be passed into the dense phase fluidized bed of said regenerator,

disc and doughnut shaped gas distributors circumferentially dispersed about the inside wall of said conduit and along the outside wall of said regenerated catalyst standpipe outlet forming said annulus to aid in creating a more uniform flow of air and catalyst into the dense phase fluidized bed of said regenerator, and

a radial distributor plate located within said regenerator adjacent to the terminal end of said annulus, the distributor plate lying within the path of the spent, coked catalyst and transporting air entering into the regenerator and against which the spent, coked catalyst and air are impinged and substantially uniformly dispersed outwardly within the dense phase fluidized bed of the regenerator.

4,397,817

CATALYTIC CONVERTER

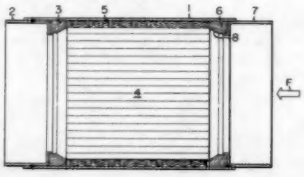
Junji Otani, Ohmiya; Yasuo Ikenoya, Kawagoe; Kanau Iwashita, Sakato, and Kazuo Fujiwara, Hatoyama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,798

Claims priority, application Japan, Aug. 20, 1980, 55-117717[U]; Aug. 22, 1980, 55-119627[U]

Int. Cl.³ F01N *3/28*

U.S. Cl. 422—179 **7 Claims**

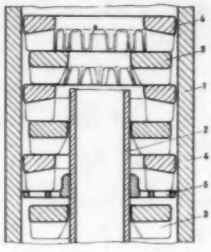


1. A catalytic convertor comprising a casing having opposite end portions and an inner circumferential surface, a catalytic element housed in said casing and having opposite end portions with outer circumferential surfaces, first and second end cushions adjacent said opposite end portions of said catalytic element having inner end portions, and first and second end members fitted into said opposite end portions of said casing and supporting said opposite end portions of said catalytic element via said first and second end cushions, said first and second end cushions being constructed such that in a free state each has a rectangular cross section and inner diameters which gradually increases toward said catalytic element, said first and second end cushions being compressively fitted between said first and second end members and said opposite end portions of said catalytic element and said respective inner end portions of said first and second end cushions being held between the inner circumferential surface of said casing and the outer circumferential surfaces of the opposite end portions of said catalytic element.

4,397,818
CRACKING TUBE APPARATUS HAVING MOLDED OR SHAPED CATALYST BODIES

Klaus Hesse, Olpe, Fed. Rep. of Germany, assignor to GHT Gesellschaft für Hochtemperaturreaktor-Technik mbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,766
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034208
Int. Cl.³ B01J *8/06*
U.S. Cl. 422—312 **5 Claims**



1. Cracking tube apparatus for the catalytic cracking of gases comprising an elongated outer tube closed at one end and which can be externally heated, a concentric inner tube of smaller diameter than the outer tube disposed in the outer tube and with the inner tube open at the closed end of the outer tube to permit flow of from one said tubes to the other of said tubes, an annular space between the outside surface of the inner tube and the inside surface of the outer tube, the apparatus further comprising

(a) first shaped catalyst bodies and second different shaped catalyst bodies alternately arranged in the annular space,

(b) said first shaped catalyst bodies being constructed and arranged to extend radially outwardly across the annular space from adjacent the inner tube so as to leave a reduced empty annular space between the first shaped catalyst bodies and the outer tube,

(c) said second shaped catalyst bodies being constructed and arranged to extend radially inwardly across the annular space from adjacent the outer tube so as to leave a reduced empty annular space between the second shaped catalyst bodies and the inner tube, thereby causing gases passed through the annular space in contact with the catalysts therein to flow in meander fashion from the outer to the inner tube and then to the outer tube, and

(d) at least one of said first and second shaped bodies having a plurality of radial ribs for axial spacing between said alternately arranged first and second shaped catalyst bodies, and the ribs being constructed and arranged to define openings between the ribs so as to provide for flow of gases in the radial direction between the outer surface of the inner tube and the inner surface of the outer tube.

4,397,819
REJUVENATION OF THE ANION EXCHANGER USED FOR URANIUM RECOVERY

Tsoung-Yuan Yan, Philadelphia, Pa., and Wilton F. Espenscheid, DeSoto, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,557
Int. Cl.³ C22B *60/02*
U.S. Cl. 423—7 **5 Claims**

4. An improved process for the recovery of uranium values from a uranium-containing lixiviant, utilizing a strong base anion exchange resin, comprising the steps of:

(a) passing the uranium-containing lixiviant through the strong base anion exchange resin to cause said resin to retain uranium values;

(b) eluting the resin with hydrochloric acid to remove uranium values therefrom;

(c) repeating steps (a) and (b) until total uranium loading capacity of the resin is substantially reduced.

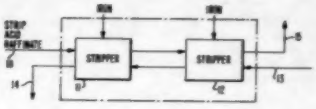
(d) washing the resin with a solution of sodium carbonate, sodium bicarbonate, or admixtures thereof for a time sufficient to restore said total uranium loading capacity; and

(e) recycling the restored resin for utilization in step (a).

4,397,820
METHOD TO MAINTAIN A HIGH FE^{+2}/FE^{+3} RATIO IN THE STRIPPING SYSTEM FOR THE RECOVERY OF URANIUM FROM WET PROCESS PHOSPHORIC ACID

Regis R. Stana, and Jose G. Lopez, both of Lakeland, Fla., assignors to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Jul. 24, 1980, Ser. No. 171,699
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—8 **2 Claims**



1. In the method of recovering uranium from wet-process phosphoric acid comprising the following steps:

(1) passing acid solution containing uranium through an extractor to provide uranium rich solvent and raffinate acid,

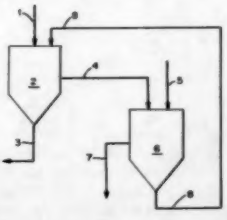
(2) contacting part of the raffinate acid with elemental iron to produce reduced acid containing iron +2, and

(3) stripping uranium rich solvent with the reduced acid in a reductive stripper system comprising at least one stripper, wherein part of the iron in the acid is oxidized to form partially oxidized acid, said partially oxidized acid containing substantial amounts of iron +3 after stripping; the improvement comprising contacting the iron +3 contained in the partially oxidized acid formed in step (3) with elemental iron powder added directly to at least one stripper of said reductive stripper system, the reduce iron +3 to iron +2.

4,397,821
PRECIPITATION OF SYNTHETIC SCHEELITE

Leo W. Beckstead, Arvada, and Paul B. Queneau, Golden, both of Colo., assignors to Amax Inc.

Filed Jan. 4, 1982, Ser. No. 337,558
Int. Cl.³ C22B *34/30*; C01G *41/00*
U.S. Cl. 423—58 **11 Claims**



1. A process for producing low-sulfur calcium tungstate from an aqueous feed solution of alkali tungstate, comprising

(a) slurrying in said solution a precipitant comprising finely

divided calcium sulfate in an amount up to the stoichiometric amount based on the tungstate in the solution,

(b) digesting the slurry formed in step (a) while maintaining the pH value of the slurry between about 9 and about 12 and under conditions such that essentially all the calcium sulfate reacts with alkali tungstate, thereby forming low-sulfur calcium tungstate which is slurried in a pregnant solution containing dissolved therein alkali sulfate, and

separating the low-sulfur calcium tungstate from the pregnant solution.

4,397,822

PROCESS FOR THE RECOVERY OF ALUMINA FROM FLY ASH

Marlyn J. Murtha, Ames, Iowa (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

Continuation of Ser. No. 358,961, Mar. 17, 1982, abandoned. This application Sep. 27, 1982, Ser. No. 424,703

Int. Cl.³ C01F *7/16*

U.S. Cl. 423—111 **9 Claims**

1. In the process for recovering alumina from fly ash containing oxides of alumina, silica and other metals wherein the fly ash is mixed with calcium carbonate to form a mixture, the mixture is heated from 1350° to 1400° C. for a period of time sufficient to form a clinker containing a soluble calcium aluminate compound, the clinker is reduced to a powder, and the powder is contacted with dilute sodium carbonate solution to dissolve the soluble calcium aluminate compound, thereby recovering the alumina, the improvement comprising, adding from about 2 to 10 weight percent carbon and elemental sulfur to the fly ash-calcium carbonate mixture before sintering, the sulfur to carbon ratio being from 0.5 to 1.5, heating the mixture to 1100° to 1300° C. for a period of time sufficient for the sulfur to react with the alumina and calcium to form a clinker containing a calcium sulfoaluminate compound, whereby upon reducing the clinker to powder and contacting the powder with dilute sodium carbonate solution, the amount of alumina recovered from the fly ash is increased.

4,397,823

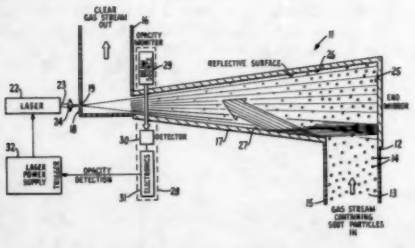
PROCESS AND APPARATUS FOR REMOVING A POLLUTANT FROM A GAS STREAM

William L. Dimpfl, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 29, 1982, Ser. No. 343,988

Int. Cl.³ B01J *8/00;* **B20C** *19/00;* **B01J** *1/10, 1/12*

U.S. Cl. 423—210 **7 Claims**



1. A process for removing a pollutant from a gas stream comprising exposing the stream to laser radiation that is directed substantially countercurrent to the flow of the gas stream and has a wavelength that is absorbed selectively by the pollutant for a time sufficient to effect substantially complete thermal degradation of the pollutant, the exposure occuring in a zone having a frustoconical shape, the gas stream passing in the direction from the base to the apex of the zone and the laser radiation being admitted into the zone at the apex thereof in a conically shaped beam that generally conforms to the dimensions and shape of the zone.

4,397,824

CONVERSION OF URANIUM HEXAFLUORIDE TO OXIDES OF URANIUM

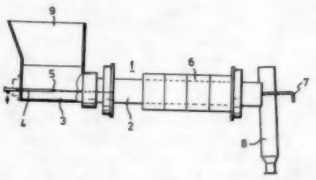
Gregg G. Butler, Kirkham; George M. Gillies, St. Annes; Thomas J. Heal, St. Annes, and James E. Littlechild, St. Annes, all of England, assignors to British Nuclear Fuels Ltd., Cheshire, England

Filed Dec. 3, 1980, Ser. No. 212,640

Claims priority, application United Kingdom, Dec. 10, 1979, 7942507

Int. Cl.³ C01G *56/00*

U.S. Cl. 423—260 **2 Claims**



1. In a process for the conversion of uranium hexafluoride to a uranium oxide which comprises injecting uranium hexafluoride and dry steam into a first region of a rotary kiln so as to form a plume of particles of uranyl fluoride in said first region, causing said particles of uranyl fluoride to be moved into a second region of the rotary kiln, and reacting the uranyl fluoride particles in said second region of the rotary kiln with a countercurrent flow of steam or hydrogen or an admixture thereof, the improvement which comprises circulating a major proportion of the uranyl fluoride particles within the first region to cause the original uranyl fluoride particles to grow and agglomerate in a dendritic manner, whereby uranyl fluoride particles moved into said second region of the rotary kiln are dendritic.

4,397,825

ZEOLITES NU-6(1) AND NU-6(2)

Thomas V. Whittam, Wilton, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 30, 1981, Ser. No. 326,026

Claims priority, application United Kingdom, Dec. 11, 1980, 8039685

Int. Cl.³ C01B *33/20, 33/28*

U.S. Cl. 423—277 **23 Claims**

1. Zeolite and Nu-6(2) having molar compositions expressed by the following formula:

0.5 to 1.5 R_2O: Y_2O_3: at least 10 XO_2: 0 to 2000 H_2O

wherein R is a monovalent cation or 1/n of a cation of valency n, X is silicon, and/or germanium, Y is one or more of aluminum, iron, chromium. vanadium, molybdenum, antimony, arsenic, manganese, gallium or boron, and H_2O is water of hydration additional to water notionally present when R is H, and having X-ray diffraction patterns substantially as set out in Table 2.

4,397,826

METHOD OF PRODUCING PHOSPHORUS PENTOXIDE IN A KILN WITH REDUCED CARBON BURNOUT

Robert A. Hard, Laguna Beach, and Jacob J. Mu, Santa Ana, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed May 10, 1982, Ser. No. 376,799
Int. Cl.³ C01B 25/12
U.S. Cl. 423—304 13 Claims

1. A process for producing phosphorus pentoxide from phosphate ore comprising the steps of:

mixing phosphate ore containing silica with solid carbonaceous material and a silica fluxing agent to form a feed mixture;

forming the feed mixture into pellets;

heating the pellets by exposure to radiation emanating from an oxidation zone within a kiln to a temperature enabling the silica fluxing agent to promote melting of the silica proximate to surface areas of the pellets to reduce oxidation of the carbonaceous material in the pellet by at least partially sealing pellet interior portions from the oxidation zone, and thereafter continuing to heat the pellets to a temperature sufficient to reduce the phosphate in the pellets by reaction with the solid carbonaceous material to form elemental phosphorus vapors; and

introducing into the kiln sufficient oxygen-containing gas to cause oxidation of the elemental phosphorus vapor within the oxidation zone to produce phosphorus pentoxide and to heat the pellets.

4,397,827

SILICO-CRYSTAL METHOD OF PREPARING SAME AND CATALYTIC CONVERSION THEREWITH

Pochen Chu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 56,754, Jul. 12, 1979, abandoned. This application Sep. 17, 1981, Ser. No. 303,276
Int. Cl.³ C01B 33/20, 33/28
U.S. Cl. 423—326 12 Claims

1. A porous silico-crystal ZSM-48 having a composition expressed in terms of moles of anhydrous oxides, per 100 moles of silica, as follows:

$$(0.05 \text{ to } 5)N_2O:(0.1 \text{ to } 10)M_{2/n}O:(0 \text{ to } 4)Al_2O_3:(100)SiO_2$$

wherein M is at least one cation having a valence n, N is a mixture of a C_2–C_{12} alkylamine compound and tetramethylammonium compound, and wherein said crystal is characterized by the X-ray diffraction pattern whose values are set forth in Table I of the specification and which exhibits a singlet line within the range of 11.8±0.2 Angstrom units.

9. A method for preparing the porous silico-crystal of claim 1 which comprises preparing a reaction mixture containing a source of silica, an alkali metal oxide, N_2O, and water and having a composition, in terms of mole ratios of oxides, falling within the following ranges:

Al_2O_3/SiO_2: 0 to 0.08
Na_2O/SiO_2: 0.01 to 1.0
N_2O/SiO_2: 0.005 to 0.5
OH^-/SiO_2: 0.01 to 0.5
H_2O/SiO_2: 10 to 200

wherein N is a mixture of C_2–C_{12} alkylamine compound and a tetramethyl ammonium compound, and maintaining said mixture until crystals of said silico-crystal are formed.

4,397,828

STABLE LIQUID POLYMERIC PRECURSOR TO SILICON NITRIDE AND PROCESS

Dietmar Seyferth, Lexington; Christian C. Prud'Homme, Boston, and Gary H. Wiseman, Somerville, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 16, 1981, Ser. No. 321,494
Int. Cl.³ C01B 21/68, 33/06, 33/00
U.S. Cl. 423—344 6 Claims

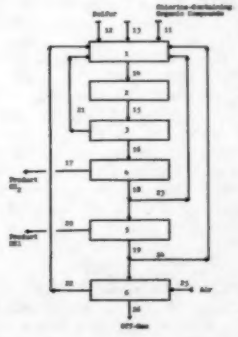
1. A stable liquid, halide-free polymer of silicon, hydrogen and nitrogen prepared by reacting in the absence of oxygen and moisture a dihydrodihalosilane with ammonia in a solvent selected from the group consisting of an ether, a chloromethane and mixtures thereof to form the soluble liquid polymer and insoluble precipitated ammonium halide, separating the soluble liquid polymer from the insoluble ammonium halide in an oxygen and moisture-free atmosphere to obtain a soluble liquid polymer solution free of ammonium halide and subsequently recovering the polymer free of ammonium halide from the solvent.

4,397,829

PROCESS FOR TREATING CHLORINE-CONTAINING ORGANIC COMPOUNDS

Wu-Chi Chen, 859 Brittmoore Rd., Houston, Tex. 77079

Filed Feb. 24, 1982, Ser. No. 351,750
Int. Cl.³ C01B 31/26, 7/01, 17/02; C01G 1/04
U.S. Cl. 423—443 8 Claims



1. A process for the treatment of chlorinated hydrocarbons consisting essentially of

(a) reacting said chlorinated hydrocarbons with a sulfur-containing stream which contains elemental sulfur and hydrogen sulfide in a reactor at temperature between 250° and 1000° C. and pressure between 10 and 700 psia. to obtain a product stream which contains carbon disulfide, hydrogen chloride, hydrogen sulfide, and unreacted sulfur; and

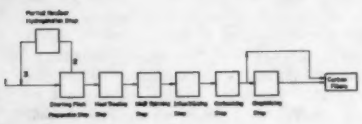
(b) recovering said unreacted sulfur for recycle or disposal, recovering said carbon disulfide as one product, removing said hydrogen chloride for recovery or disposal, and removing said hydrogen sulfide for recycle, disposal, or conversion into elemental sulfur.

4,397,830

STARTING PITCHES FOR CARBON FIBERS

Seiichi Uemura, Tokyo; Shunichi Yamamoto, and Takao Hirose, both of Kamakura; Hiroaki Takashima, Kawasaki; Osamu Kato, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan
Ltd., Tokyo, Japan

Filed Apr. 9, 1982, Ser. No. 366,917
Claims priority, application Japan, Apr. 13, 1981, 56-54304; Apr. 14, 1981, 56-55108; Apr. 27, 1981, 56-62427
Int. Cl.³ D01F 9/12; C10C 3/02, 3/00
U.S. Cl. 423—447.1 2 Claims



1. A process for the production of carbon fibers which comprises heat treating a starting pitch to obtain a precursor pitch, melt spinning the thus obtained precursor pitch, infusibilizing the thus spun pitch, carbonizing the thus infusibilized pitch, and if desired, graphitizing the thus carbonated pitch, wherein the starting pitch is produced by the following method:

(A) mixing 100 parts by volume of (1) a heavy fraction oil boiling at not lower than 200° C. obtained at the time of steam cracking of petroleum with 10–200 parts by volume of (2) a hydrogenated oil selectcd from the group consisting of:

(a) aromatic nucleus hydrogenated hydrocarbons prepared from aromatic hydrocarbons of 2–10 rings by hydrogenating the aromatic nucleus thereof;

(b) a hydrogenated oil obtained by contacting a fraction oil boiling at 160°–650° C. produced at the time of heat treating, at 370°–480° C., a heavy fraction oil boiling at not lower than 200° C. obtained at the time of steam cracking a fraction and/or petroleum boiling at 160°–650° C. obtained at the time of steam cracking petroleum, with hydrogen in the presence of a hydrogenating catalyst to hydrogenate 10–70% of the aromatic nucleus of aromatic hydrocarbons contained in said fraction boiling at 160°–650° C.; and

(c) a hydrogenated oil obtained by contacting a fraction boiling at 160°–650° C. produced at the time of preparing the starting pitches by heat treatment,

with hydrogen in the presence of a hydrogenating catalyst to hydrogenate 10–70% of the aromatic nuclei of aromatic hydrocarbons contained in said fraction boiling at 160°–650° C., to form a mixture of the oils (1) and (2), and then

(B) heat treating the thus formed oil mixture at 370°–480° C. under a pressure of 2–50 kg/cm².G thereby to obtain the starting pitch.

4,397,831

PRODUCTION OF CARBON FIBERS FROM ACRYLONITRILE BASED FIBERS

Kazuhisa Saito, and Hiroyasu Ogawa, both of Shizuoka, Japan, assignors to Toho Belson Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 200,623
Claims priority, application Japan, Oct. 25, 1979, 54-137979
Int. Cl.³ D01F 9/22
U.S. Cl. 423—447.6 2 Claims

1. A process for processing a carbon fiber which comprises subjecting an acrylonitrile based fiber composed of copolymers comprising at least 96 mole % of acrylonitrile and 1×10^{-2} to 70×10^{-2} mole % of one or more vinyl components containing acidic groups, 50 to 100% of the counter ions of the acidic groups being substituted by zinc, to oxidation treatment at 200° to 300° C. using plurality of roller units while limiting the shrinkage of said acrylonitrile based fiber to 20 to 50% of the free shrinkage as determined for that stage of the oxidation reaction until the amount of the bonded oxygen reaches 3 to 4% by weight, and upon subsequent oxidation treatment, limiting the shrinkage of the fiber to 50 to 70% of the free shrinkage as determined for the subsequent oxidation reaction to thereby produce an oxidized or flame resistant fiber, and then carbonizing the oxidized or flame resistant fiber in a non-oxidizing atmosphere at 500° to 2000° C. while limiting the shrinkage of the fiber to 40 to 70% of the free shrinkage.

4,397,832

MANUFACTURE OF CALCIUM HYPOCHLORITE

Gilbert Thibault, Coquitlam, and David C. Mayotte, Hull, both of Canada, assignors to C-I-L Inc., North York, Canada

Filed Mar. 24, 1982, Ser. No. 361,578
Claims priority, application Canada, Mar. 27, 1981, 374067
Int. Cl.³ C01B 11/06
U.S. Cl. 423—474 5 Claims

1. A process for the preparation of calcium hypochlorite by interreaction of chlorine, sodium hydroxide and calcium hydroxide comprising the steps:

(a) loading a stirred reactor with an aqueous solution of the total required amount of sodium hydroxide and from 10% to 80% by weight of the total required amount of calcium hydroxide as an aqueous suspension;

(b) passing chlorine through this suspension until the reaction mixture has reached a redox potential in the range of 650 to 800 mV;

(c) while continuing chlorination, continuously adding the remaining of the calcium hydroxide at such a rate with respect to chlorine that the redox potential gradually increases to a value from 850 to 950 mV; and

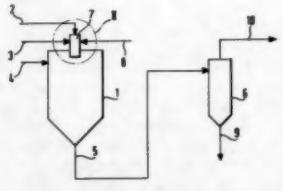
(d) collecting the resulting slurry of calcium hypochlorite; the temperature of the reaction mixture throughout the reaction being maintained in the range from 10° C. to 30° C.

4,397,833

PROCESS FOR THE CONTINUOUS PRODUCTION OF ALKALI METAL SUPEROXIDES

Werner Doetsch, and Paul-Wilhelm Fuchs, both of Bad Hoenningen, Fed. Rep. of Germany, assignors to Peroxid-Chemie GmbH, Hoellriegelskreuth, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,957
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105584
Int. Cl.³ B01J 2/24
U.S. Cl. 423—581 19 Claims



1. A process for preparing an alkali metal superoxide, which comprises the steps of continuously introducing into a reaction zone an alkali metal hydroxide, hydrogen peroxide and an inert gas; forming in said reaction zone an aerosol comprising the alkali metal hydroxide and hydrogen peroxide finely dispersed in the inert gas; and

reacting the alkali metal hydroxide and hydrogen peroxide in said aerosol within said reaction zone at a temperature at least equal to the dismutation temperature of the addition product of the alkali metal peroxide with hydrogen peroxide.

4,397,834

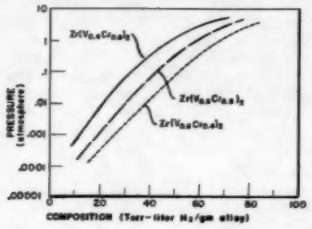
METHOD OF GETTERING HYDROGEN UNDER CONDITIONS OF LOW PRESSURE

Marshall H. Mendelsohn, Woodridge, and Dieter M. Gruen, Downers Grove, both of Ill. (granted to U.S. Department of Energy under the provisions of U.S.C. 2182)

Division of Ser. No. 196,710, Oct. 14, 1980, abandoned. This application Jan. 6, 1982, Ser. No. 337,339

Int. Cl.³ C01B 6/74; C22C 16/00

U.S. Cl. 423—644 4 Claims



1. In a method of gettering hydrogen from a low pressure environment comprising contacting the hydrogen at a pressure as low as 10^{-6} torr with a ternary intermetallic compound, the improvement wherein said compound has the formula $Zr(V_{1-x}Cr_x)_2$ where $0.01 \leqq x \leqq 0.90$, and wherein x is preselected in accordance with the requirements of said gettering environment such that when x is low, the minimum hydrogen gettering pressure is lower and the gettering temperature is higher, and when x is high, the minimum hydrogen gettering pressure is higher and the gettering temperature is lower.

4,397,835

ENTEROSOLUBLE HARD-CAPSULATED MEDICAMENTS

Yasushi Takagishi, Nishinomiya; Yoshio Doi, Ibaraki, and Noboru Hoshi, Higashi-Kurumo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka and Shin-Etsu Chemical Co., Ltd., Tokyo, of JPX

Continuation of Ser. No. 169,395, Jul. 16, 1980, Pat. No. 4,337,463. This application Apr. 28, 1982, Ser. No. 372,791

Claims priority, application Japan, Aug. 24, 1979, 54-108447

Int. Cl.³ A61K 9/48

U.S. Cl. 424—35 1 Claim

1. An enterosoluble encapsulated medicament which is weighted with a weighting agent so that the entire encapsulated medicament possesses an overall specific gravity of at least 1.05, and the medicament is a suspension of the effective ingredient in an oily base, and the enterosoluble encapsulating material consists essentially of an enterosoluble cellulose derivative selected from the group consisting of cellulose acetate phthalate, hydroxypropylmethylcellulose phthalate, methylcellulose phthalate and cellulose acetate succinate.

4,397,836

AEROSOL HAIR LACQUER COMPOSITION CONTAINING AS A PROPELLANT A MIXTURE OF TRIFLUOROMONOCHLOROETHANE AND CARBON DIOXIDE AND OR NITROUS OXIDE

Annie Madrange, Saint-Germain-en-Laye, and Jean-Louis Refregier, Boussy St-Antoine, both of France, assignors to Societe Anonyme Dite: L'OREAL, Paris, France

Continuation of Ser. No. 905,454, May 12, 1978, abandoned. This application Jun. 26, 1981, Ser. No. 277,855

Claims priority, application France, May 17, 1977, 77 15089

Int. Cl.³ A61K 7/00, 7/06

U.S. Cl. 424—47 10 Claims

1. In a sprayable hair lacquer composition packaged under pressure in an aerosol container comprising

(i) an effective amount of a synthetic polymer for fixing the hair,

(ii) an effective amount of an aliphatic alcohol having from 2–4 carbon atoms,

(iii) from 0 to 40 weight percent of an auxiliary solvent,

(iv) from 0 to 20 weight percent water, and

(v) a propellant,

the improvement comprising as a propellant a mixture consisting essentially of (a) trifluoromonochloroethane in an amount from 5 to 80 weight percent of said composition and (b) nitrous oxide in an amount sufficient so that the internal pressure of said container is between 3 and 8 bars.

4,397,837

PROCESS AND COMPOSITION FOR THE REMINERALIZATION AND PREVENTION OF DEMINERALIZATION OF ANIMAL TEETH INCLUDING HUMANS

Helmut Raaf, Karlsruhe-Waldstadt; Helmut Harth, Mainz, and Helmar R. Wagner, Darmstadt-Arheilgen, all of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 327,466, Jan. 29, 1973, abandoned. This application Jan. 14, 1975, Ser. No. 540,862

Claims priority, application United Kingdom, Feb. 2, 1972, 4848/72

Int. Cl.³ A61K 7/16, 7/18, 23/42, 33/16

U.S. Cl. 424—51 10 Claims

1. Process for remineralizing demineralized dental enamel of the tooth with a precipitate bound to the tooth structure, said process comprising the steps of applying first ions to the tooth surface so that said first ions diffuse through the tooth surface into demineralized dental enamel and thereafter applying second ions to the tooth surface into demineralized dental enamel and form a precipitate with previously applied first ions in said dental enamel, said first ions comprising one of either calcium ions or phosphate ions, said second ions comprising the other of either calcium ions or phosphate ions, said calcium ions being applied in the form of a solution comprising from about 0.005 to about 3.5% of calcium ion from a water-soluble calcium salt which is compatible in the oral environment, said phosphate ions being applied in the form of a solution comprising from about 0.005 to about 4% of phosphate ions a water-soluble phosphate salt which is compatible in the oral environment, each of the applications being carried out for a time period consistent with normal dental care habits.

4,397,838

PREPARATIONS OF PURIFIED BACTERIAL MEMBRANAL PROTEOGLYCANS

Lucien D. d'Hinterland; Gerard Normier; Anne-Marie Pinel, and Jacques Durand, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

Division of Ser. No. 103,202, Dec. 13, 1979, Pat. No. 4,297,272.
This application Jul. 6, 1981, Ser. No. 280,379
Claims priority, application France, Dec. 19, 1978, 78 35649
Int. Cl.³ A61K *39/00, 39/102, 39/09;* C07G *7/00*
U.S. Cl. 424—92 14 Claims

1. An immunity adjuvant for vaccines comprising purified water-soluble proteoglycans obtained by a process which comprises at least one step in which crude membranal proteoglycans of Klebsiella, Serratia or Escherichia are treated in an aqueous medium with a reactant selected from the group consisting of bases and hypobromites followed by removal of the excess reactant and the insoluble residue, said purified water-soluble proteoglycans having the following composition by weight:

hexoses	24–42%
proteins	31–53%
lipids	12–18%
hexosamines	2–6%
RNA	<0.5%
DNA	<0.2%
LPS	<0.001%

4. A vaccine based on bacterial ribosome and/or RNA as immunogenic agent containing as immunity adjuvant an effective amount of an adjuvant of the type set forth in claim 1.

4,397,839

SURFACE ACTIVE MATERIAL AND PROCESS FOR PREPARING SAME

Yuji Tanaka, Toda, Japan, assignor to Tokyo Tanabe Company, Limited, Japan

Filed Mar. 4, 1982, Ser. No. 354,628
Claims priority, application Japan, Sep. 10, 1981, 56-141672
Int. Cl.³ A61K *35/12*
U.S. Cl. 424—95 31 Claims

1. A surface active material comprising (1) phospholipid, neutral fat, total cholesterol, free fatty acids, carbohydrate, protein and water, all of which are obtained from the lung tissue of a mammal, and (2) optionally at least one additional component selected from the group consisting of a phosphatidylcholine, a neutral fat and a free fatty acid, characterized in that the overall phospholipid content is 68.6–90.7%, the overall neutral fat content is 0.3–13.0%, the total cholesterol content is 0.0–8.0%, the overall free fatty acid content is 1.0–27.7%, the carbohydrate content is 0.1–2.0%, the protein content is 0.0–3.5%, and the water content is 2.1–5.2%, all based on the dry weight of the material, the surface tension of the material as measured at 15°–25° C. by Wilhelmy's method in which the material is added dropwise to the surface of physiological saline in an amount of 0.3–0.8 μg per square centimeter of the surface area thereof being 30.1–47.5 dynes/cm when the surface area is 54.0 cm^2.

16. A method of producing a surface active material comprising (1) phospholipid, neutral fat, total cholesterol, free fatty acids, carbohydrate, protein and water, all of which are obtained from the lung tissue of a mammal, and (2) optionally at least one additional component selected from the group consisting of a phosphatidylcholine, a neutral fat and a free fatty acid, characterized in that the overall phospholipid content is 68.6–90.7%, the overall neutral fat content is 0.3–13.0%, the total cholesterol content is 0.0–8.0%, the overall free fatty acid content is 1.0–27.7%, the carbohydrate content is 0.1–2.0%, the protein content is 0.0–3.5%, and the water content is 2.1–5.2%, all based on the dry weight of the material, the surface tension of the material as measured at 15°–25° C. by Wilhelmy's method in which the material is added dropwise to the surface of physiological saline in an amount of 0.3–0.8 μg per square centimeter of the surface area thereof being 30.1–47.5 dynes/cm when the surface area is 54.0 cm^2, the method comprising the steps of:

(a) bringing the minced lung tissue of a mammal into contact with an electrolyte solution to obtain an extract;
(b) centrifuging the extract to collect a crude sediment;
(c) adjusting the specific gravity of an aqueous suspension of the crude sediment by the addition of sodium chloride and centrifuging the adjusted suspension to isolate a top layer comprising an emulsified scum layer;
(d) dialyzing an aqueous suspension of the top layer and lyophilizing the dialyzed suspension to obtain a crude dry product;
(e) bringing the crude dry product into contact with an acetic acid ester to collect a material insoluble in the acetic acid ester and then bringing the insoluble material into contact with an organic solvent mixture to obtain a purified filtrate; and
(f) concentrating the purified filtrate to obtain a solid residue, optionally adding to the solid residue at least one additional component selected from the group consisting of a phosphatidylcholine, a neutral fat and a free fatty acid, so as to provide an overall phospholipid content of 68.6–90.7%, an overall neutral fat content of 0.3–13.0%, and an overall free fatty acid content of 1.0–27.7%, all based on the dry weight of the final product, at well as an overall phosphatidylcholine content of 58.4–85.0% based on the total weight of phospholipid, and then lyophilizing the resulting mixture.

4,397,840

NOVEL ERYTHROPOIETIN PRODUCT AND METHOD FOR THE PREPARATION THEREOF

Kenji Takezawa, Yokohama, and Hajima Hiratani, Osaka, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo and Japan Chemical Research Co., Ltd., Kobe, both of, Japan

Filed Mar. 3, 1982, Ser. No. 354,302
Claims priority, application Japan, Mar. 11, 1981, 56-34727
Int. Cl.³ A61K *35/22*
U.S. Cl. 424—99 7 Claims

1. A method for the preparation of an erythropoietin product having no inhibitory effect against erythropoiesis which comprises the steps of

(a) adsorbing a crude erythropoietin product obtained from the urine of healthy human on to a weakly basic anion exchanger from a neutral or weakly acidic aqueous solution in the presence of an inorganic neutral salt in a concentration in the range from 0.1 to 0.2 mole per liter, and
(b) eluting the thus adsorbed erythropoietin product with an aqueous eluant solution containing an inorganic neutral salt in a concentration in the range from 0.5 to 0.7 mole per liter.

7. An erythropoietin product having no inhibitory effect against erythropoiesis with a molecular weight in the range from 4,000 to about 13,000 and an isoelectric point in the range from 3.1 to 3.6.

4,397,841

PRODUCTION OF BLOOD COAGULATION FACTOR VIII:C

John H. Johnson, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 28, 1982, Ser. No. 392,929
Int. Cl.³ A61K *35/14*
U.S. Cl. 424—101 9 Claims

1. A method for the preparation of a concentrate of Factor VIII:C from blood plasma which comprises

(a) admixing said blood plasma or a concentrate thereof at pH of from about 7.0 to about 8.5 with from about 0.01% to about 0.1% by weight of water-insoluble, polyelectrolyte copolymer of ethylene and maleic anhydride crosslinked with from about 3 mole % to about 10 mole % of

loweralkyliminobis(loweralkylamine) and containing from about 90 mole % to about 100 mole % of pendant diloweralkylaminoloweralkylimide functional groups, said admixing in the presence of exogenous heparin,

(b) separating the supernatant from the resulting adsorbed plasma fraction,

(c) admixing said supernatant at pH of from about 5.5 to about 6.5 with from about 1% to about 10% by weight of water-insoluble, polyelectrolyte copolymer of ethylene and maleic anhydride cross-linked with from about 3 mole % to about 10 mole % of loweralkyliminobis(loweralkylamine), containing from about 3 mole % to about 7 mole % of pendant diloweralkylaminoloweralkylimide functional groups, and further characterized in that substantially all the remaining free carboxyl or anhydride sites are blocked with alkoxyalkylamine, said admixing in the presence of exogenous heparin,

(d) separating the resulting adsorbed plasma fraction from the supernatant and recovering therefrom a concentrate of Factor VIII:C by elution from the adsorbent, and

(e) wherein said alkyl and alkoxy have from about one to about four carbon atoms and the exogenous heparin is present in a range of from about 0.01 to about two units per ml of plasma.

4,397,842

PEPTIDES HAVING THYMOPOIETIN-LIKE ACTIVITY

Gideon Goldstein, Short Hills, and George Heavner, Flemington, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 124,959, Mar. 13, 1980, Pat. No. 4,261,886, which is a continuation-in-part of Ser. No. 29,595, Apr. 12, 1979. This application Mar. 30, 1981, Ser. No. 248,759

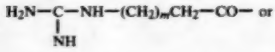
Int. Cl.³ A61K *37/00*

U.S. Cl. 424—177 **5 Claims**

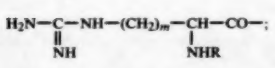
1. A parenteral therapeutic composition of matter comprising a pharmaceutically acceptable carrier and from about 0.1 to 10 ng/kg of body weight of a peptide having the following sequence:

A—X—Z—Y—B

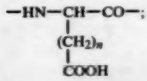
and the pharmaceutically acceptable salts thereof, wherein A is



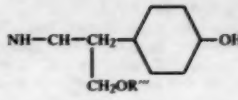
or



X is a suitable neutral, aliphatic or aromatic amino acid residue selected from the group consisting of ALA, 2—Me—ALA, GLY, LEU, ILE, LYS, THR, SER, PHE, MET, D—ALA, D—LEU, D—ILE, D—LYS, D—THR, allo—THR, D—SER, D—PHE, D—MET, and SAR; Z is



Y is GLY, SER, THR, LEU, ILE, VAL, or SAR; B is TYR—R′, D—TYR—R′, decarboxy—TYR, or



3 or 4; n is 1, 2, or 3; R‴ is hydrogen, C_1–C_7 alkyl, C_6–C_{12} aryl, or C_1–C_7 alkanoyl; R and R′ are terminal groups on said peptide which do not substantially affect the biological capability thereof, said R and R′ being selected from the groups consisting of:

R	R′
Hydrogen	OH
C_1–C_7 alkyl	NH_2
C_6–C_{12} aryl	NHR″
C_6–C_{20} alkaryl	N(R″)$_2$
C_6–C_{20} aralkyl	OR″
C_1–C_7 alkanoyl	—
C_2–C_7 alkenyl	VAL
C_2–C_7 alkynyl	GLN
GLN	LEU
GLU	TYR
GLY	VAL—GLN
GLU—GLN	VAL—LEU
GLY—GLN	VAL—TYR
GLY—GLU	GLN—LEU
GLY—GLU—GLN	GLN—TYR
	GLN—VAL
	LEU—TYR
	LEU—LEU
	TYR—LEU
	VAL—GLN—LEU
	VAL—GLN—LEU—TYR
	VAL—GLN—LEU—TYR—LEU

wherein R″ is C_1–C_7 alkyl, C_2–C_7 alkenyl, C_2–C_7 alkynyl, C_6–C_{20} aryl, C_6–C_{20} aralkyl, or C_6–C_{20} alkaryl; provided that R—ARG—LYS—ASP—VAL—TYR—R′ is excluded.

4,397,843

MANNOSE-6-PHOSPHATE-LOW DENSITY PROTEIN REAGENT EFFECTIVE AGAINST HYPERCHOLESTEROLEMIA

David M. Neville, Jr., Bethesda; Richard J. Youle, Kensington, and Gary J. Murray, Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 199,781, Oct. 23, 1980, Pat. No. 4,356,117. This application Jan. 21, 1982, Ser. No. 341,572

Int. Cl.³ A61K *37/00*

U.S. Cl. 424—177 **2 Claims**

1. A reagent for treating familial hypercholestrolemia comprising an effective amount of mannose-6-phosphate-low density lipoprotein.

2. A cholesterol synthesis inhibiting reagent composition comprising an effective amount of mannose-6-phosphate-low density protein.

4,397,844

ANTIGEN DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Gerhard Baschang, Bettingen; Felix M. Dietrich, Basel; Roland Gisler, Binningen, all of Switzerland; Albert Hartmann, Grenzach, Fed. Rep. of Germany; Jaroslav Stanek, Birsfelden, Switzerland, and Lajos Tarcsay, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

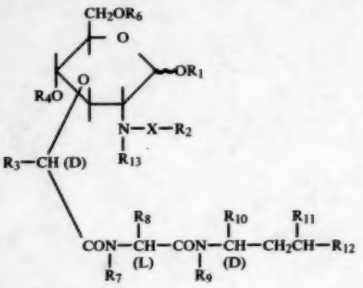
Division of Ser. No. 14,190, Feb. 22, 1979. This application Sep. 17, 1981, Ser. No. 303,244

Claims priority, application Switzerland, Feb. 24, 1978, 2035/78; Apr. 7, 1978, 3777/78; May 18, 1978, 5394/78

Int. Cl.[3] A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 24 Claims

1. A compound of the formula I



(I)

in which X is a carbonyl group, R_1, R_4 and R_6 independently of one another represent hydrogen tri-lower alkyl-silyl, alkyl having from 1 to 18 carbon atoms, benzyl which is unsubstituted or substituted in the aromatic nucleus by lower alkyl, hydroxyl, lower alkoxy, lower alkylenedioxy, mercapto, lower alkylmercapto, trifluoromethyl and/or halogen, or represent alkanoyl having from 2 to 18 carbon atoms, benzoyl or naphthoyl which are unsubstituted or substituted by halogen, lower alkyl, lower alkoxy, trifluoromethyl, hydroxyl or lower alkanoyloxy, or represent an acyl radical of a lower alkanesulfonic acid or of phenylsulfonic acid, which is unsubstituted or substituted by lower alkyl or halogen, or represent carbamoyl, lower alkyl-carbamoyl or phenyl-carbamoyl, R_2 represents alkyl having 1 to 18 carbon atoms which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylmercapto, lower alkanoylmercapto, carboxy, lower alkoxycarbonyl and/or carbamoyl, or represents phenyl which is unsubstituted or substituted by lower alkyl, hydroxy, lower alkoxy, lower alkanoyl, lower alkylenedioxy, halogen and/or trifluoromethyl, R^3 represent hydrogen or lower alkyl, at least one of the radicals R_7, R_9 and R_{13} represents lower alkyl, and the others represent hydrogen, R_8 is hydrogen, lower alkyl which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, mercapto, lower alkylmercapto, lower alkanoylmercapto, amino, lower alkanoylamino, carbamoylamino or cycloalkyl having 5 or 6 carbon atoms, or represents cycloalkyl-lower alkyl having 5 or 6 carbon atoms, in the cyclic moiety, phenyl or phenyl-lower alkyl, in which the phenyl radicals are unsubstituted or substituted as defined above, or heterocyclyl or heterocyclyl-lower alkyl wherein the heterocyclyl radicals are 5- or 6-membered, contain one or two nitrogen atoms in the ring and may or may not contain a fused phenyl radical, R_7 and R_8 together can also represent alkylene having 3 or 4 carbon atoms, R_{10}, R_{11} and R_{12} independently of one another represent carboxyl, lower alkoxycarbonyl or carbamoyl which is unsubstituted or mono- or disubstituted at the nitrogen atom by unsubstituted, or carboxy- or carbamoyl-substituted, lower alkyl or by phenyl, benzyl, tetramethylene or pentamethylene or R_{11} can also be hydrogen, or a salt of such a compound having a salt-forming group.

4,397,845

LINCOMYCIN 3-(5'-ADENYLATE) AS ANESTHETIC

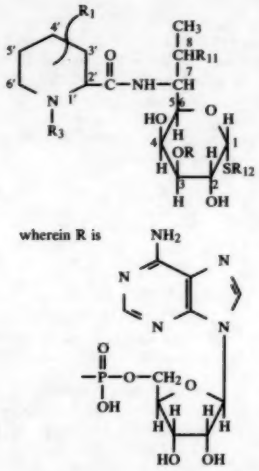
Harry R. Allen, Texas Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 19, 1982, Ser. No. 379,529

Int. Cl.[3] A61K *31/71*; C07H *15/16*

U.S. Cl. 424—180 3 Claims

1. A method for treating a human or animal subject in need of a local anesthetic which comprises administering to said subject an effective local anesthetic dose of a compound of the formula



wherein R is

R_1 is H, C_1–C_8-alkyl; R_{11} is OH, OCH_3, halogen (Cl, Br, I), $-SCH_2CH_2OH$, $-SCH_2CH_2CH_2OH$, SCH_3; R_{12} is CH_3, CH_2CH_3, $-CH_2CH_2OH$,

or the pharmaceutically acceptable acid addition salts thereof, selected from the group consisting of hydrochloride, sulfate, phosphoric, sodium, potassium, calcium, and lithium, as an essential active ingredient in combination with a pharmaceutical carrier.

4,397,846

STORAGE-STABLE LIPID VESICLES AND METHOD OF PREPARATION

Murray Weiner, 8915 Spooky Ridge La., Cincinnati, Ohio 45242, and Klaus Gersonde, Preusweg 69, D-5100 Aachen, Fed. Rep. of Germany

Filed May 15, 1981, Ser. No. 263,942

Int. Cl.[3] A61K *31/685*, *45/00*

U.S. Cl. 424—199 12 Claims

1. The process for preparing an aqueous lipid vesicle suspension, wherein a biologically active agent is encapsulated within a unilamellar phopholipid membrane, stable to long term storage at temperatures of −20° C. and below, which comprises

rapidly freezing the lipid vesicle suspension at a temperature of from about −196° C. to about −30° C., wherein the lipid vesicle suspension is frozen in a liquid propane bath at a temperature of from −190° C. to −141° C.

4,397,847

METHOD OF TREATMENT

Alfred Boris, Parsippany; John J. Partridge, and Milan R. Uskokovic, both of Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 17, 1982, Ser. No. 379,384

Int. Cl.³ A61K *31/59*

U.S. Cl. 424—236 **3 Claims**

1. A method for the treatment of osteoporosis which comprises administering to a host suffering from osteoporosis an effective amount of 24,24-difluoro-1α,25-dihydroxycholecalciferol.

4,397,848

N-SUBSTITUTED AZIRIDINE-2-CARBOXYLIC ACID IMMUNOSTIMULANT DERIVATIVES

Elmar Bosies, Weinheim; Wolfgang Kampe, Heddesheim; Max Thiel, Mannheim; Uwe Bicker, Lorsch, and Dietmar Boerner, Lampertheim-Hüttenfeld, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

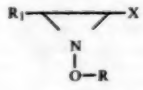
Continuation of Ser. No. 117,165, Jan. 31, 1980, abandoned. This application Feb. 20, 1981, Ser. No. 236,375

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906603

Int. Cl.³ C07D *203/22, 401/12, 403/12;* A61K *31/395*

U.S. Cl. 424—244 **9 Claims**

1. An N-substituted aziridine-2-carboxylic acid derivative having the formula



wherein

X is a carboxyl, a cyano, an alkoxycarbonyl or a carbamoyl radical optionally substituted by lower alkyl, cycloalkyl, aryl and/or acyl,

R is an alkyl radical, and

R_1 is a hydrogen atom or an alkyl or phenyl radical,

acyl as employed hereinabove being selected from the group consisting of formyl, acetyl, benzoyl, tosyl, and methylsulphonyl, alkyl as employed hereinabove unless otherwise specified containing up to 8 carbon atoms, and aryl being selected from the group consisting of phenyl, naphthyl, anthracenyl, phenanthrenyl and fluorenyl;

or a pharmacologically acceptable salt thereof.

7. An immunostimulating composition of matter consisting essentially of an immunostimulating effective amount of a compound or salt according to claim 1 in admixture with a pharmaceutically acceptable diluent.

4,397,849

BENZOTHIAZINE DERIVATIVES

Tsutomu Teraji; Teruo Oku, both of Osaka, and Youichi Shiokawa, Takatsuki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

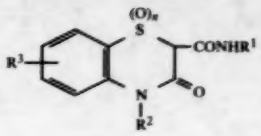
Filed Dec. 11, 1981, Ser. No. 329,862

Claims priority, application United Kingdom, Dec. 30, 1980, 8041520

Int. Cl.³ C07D *279/16, 417/12;* A61K *31/54*

U.S. Cl. 424—246 **6 Claims**

1. A compound of the formula or its pharmaceutically acceptable salt:



wherein

R^1 is lower alkyl which may have one or more substituents selected from carboxy, phenyl and carboxy(lower)cycloalkyl;

phenyl which may have one or more substituents selected from halogen, lower alkyl, halo(lower)alkyl and lower alkoxy;

halophenylamino; or

5- or 6-membered heterocyclic group containing at least one hetero atom selected from oxygen, nitrogen and sulfur;

R^2 is hydrogen, lower alkyl, lower alkylamino(lower)alkyl, phenyl or phenyl(lower)alkyl;

R^3 is hydrogen, halogen, lower alkyl or lower alkoxy; and

n is an integer 0 to 2.

6. A pharmaceutical composition for inhibition of contact hypersensitivity comprising as an active ingredient an effective amount of a compound of claim 1 or its pharmaceutically acceptable salt in admixture with a pharmaceutically acceptable carrier.

4,397,850

ISOXAZOLYL INDOLAMINES

Jeffrey Nadelson, Denville, and Leonard J. Brand, Randolph, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

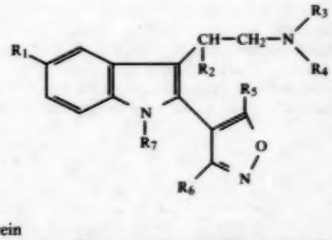
Filed Oct. 7, 1981, Ser. No. 309,255

The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.

Int. Cl.³ C07D *413/04, 413/14;* A61K *31/40*

U.S. Cl. 424—248.4 **7 Claims**

1. A compound of the formula



(I)

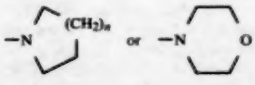
wherein

R_1 represents hydrogen, fluoro, chloro, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms, and

R_2 represents hydroxy, and

R_3 and R_4 each independently represent lower alkyl having 1 to 4 carbon atoms, or

R_3 and R_4 together with N represent



wherein

n is 1, 2 or 3, and

R_5 and R_6 each independently represent hydrogen or lower alkyl having 1 to 4 carbon atoms, and

R_7 represents lower alkyl having 1 to 4 carbon atoms

or a pharmaceutically acceptable acid addition salt thereof.

4,397,851

2,3-DIHALO-2,3-(DISUBSTITUTED) PROPANOATE ANTIMICROBIAL COMPOUNDS

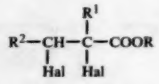
John E. Engelhart, Westfield, N.J.; Marshall R. Angeles, Scotchplains, both of N.J., and Michael J. D'Errico, Flossmoor, Ill., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 22, 1981, Ser. No. 333,269

Int. Cl.[3] **A61K** *31/495;* **C07D** *239/26, 211/32;* **C07C** *69/612, 69/635*

U.S. Cl. 424—250 **4 Claims**

1. A compound of the formula:



(I.)

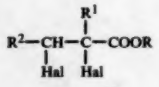
wherein

Hal is bromine or chlorine;

R is C_{1-4} alkyl, straight or branched chain; and

one of R^1 and R^2 is hydrogen and the other is selected from the group consisting of C_{3-8} cycloalkyl; C_{3-8} cycloalkyl C_{1-3} alkyl; phenyl; phenyl C_{1-3} alkyl; mono- or disubstituted phenyl or phenyl C_{1-3} alkyl wherein the substituents are halo, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, nitro, cyano, or trifluoromethyl; a heterocyclic radical selected from the group consisting of thienyl, furanyl, pyrrolyl, isoxazolyl, oxazolyl, isothiazolyl, thiazolyl, pyrazolyl, imidazolyl, pyridazinyl, pyrimidinyl, pyrazinyl and pyridinyl, and N-oxides thereof; and a saturated heterocyclic radical selected from the group consisting of pyrrolidinyl, tetrahydrofuranyl, tetrahydrothienyl, isoxazolidinyl, oxazolidinyl, isothiazolidinyl, thiazolidinyl, pyrazolidinyl, imidazolidinyl, piperazinyl, and piperidinyl.

2. An antimicrobial composition comprising a carrier and an antimicrobially effective amount of a compound of the formula:



(I.)

wherein

Hal is bromine or chlorine;

R is C_{1-4} alkyl, straight or branched chain; and

one of R^1 and R^2 is hydrogen and the other is selected from the group consisting of C_{3-8} cycloalkyl; C_{3-8} cycloalkyl C_{1-3} alkyl; phenyl; phenyl C_{1-3} alkyl; mono- or disubstituted phenyl or phenyl C_{1-3} alkyl wherein the substituents are halo, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, nitro, cyano, or trifluoromethyl; a heterocyclic radical selected from the group consisting of thienyl, furanyl, pyrrolyl, isoxazolyl, oxazolyl, isothiazolyl, thiazolyl, pyrazolyl, imidazolyl, pyridazinyl, pyrimidinyl, pyrazinyl, and pyridinyl, and N-oxides thereof; and a saturated heterocyclic radical selected from the group consisting of pyrrolidinyl, tetrahydrofuranyl, tetrahydrothienyl, isoxazolidinyl, oxazolidinyl, isothiazolidinyl, thiazolidinyl, pyrazolidinyl, imidazolidinyl, piperazinyl, and piperidinyl.

4,397,852

[3,6-PYRIDAZINEDIYLBIS(THIO)]BIS-[2,2-DIMETHYLALKANOIC ACIDS] AND DERIVATIVES AS ANTI-ARTERIOSCLEROTIC AGENTS AND METHOD

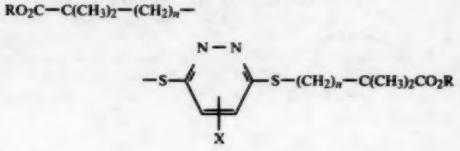
Ila Sircar, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 18, 1981, Ser. No. 332,058

Int. Cl.[3] **C07D** *237/18;* **A61K** *31/50*

U.S. Cl. 424—250 **10 Claims**

1. A compound having the structural formula



wherein n is 3; X is hydrogen, phenyl, or alkyl of from 1 to 6 carbon atoms; R is hydrogen, alkyl of from 1 to 6 carbon atoms or a pharmaceutically acceptable cation; and the pharmaceutically acceptable acid addition salts thereof.

4,397,853

ISOXAZOLE DERIVATIVES

Takeshi Kawakita; Tomio Muro, and Michihide Setoguchi, all of Nakatsu, Japan, assignors to Yoshitomi Pharmaceutical Industries Ltd., Japan

PCT No. PCT/JP80/00286, § 371 Date Jul. 28, 1981, § 102(e) Date Apr. 14, 1981, PCT Pub. No. WO81/01554, PCT Pub. Date Jun. 11, 1981

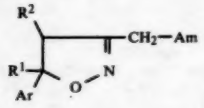
PCT Filed Nov. 25, 1980, Ser. No. 253,930

Claims priority, application Japan, Nov. 28, 1979, 54-154715

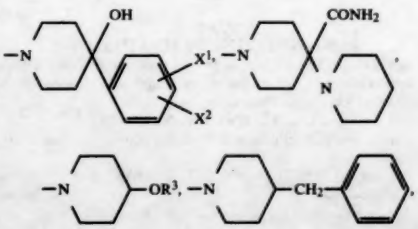
Int. Cl.[3] **A61K** *31/495;* **C07D** *471/20*

U.S. Cl. 424—250 **10 Claims**

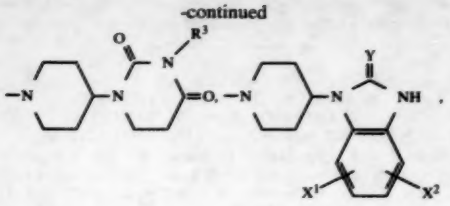
1. An isoxazole represented by the formula

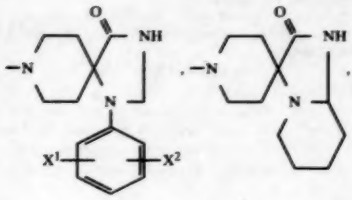


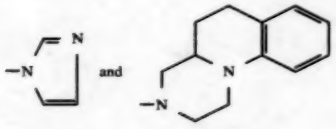
or salts thereof wherein Ar represents a phenyl group which may optionally be substituted with a halogen atom or a lower alkoxy group, or a pyridyl group, R^1 represents a hydrogen atom, a lower alkyl or a group represented by a group Ar, R^2 represents a hydrogen atom, or alternatively R^1 and R^2 are bound together and form a carbon-carbon bond, and Am represents an amino residue selected from the group consisting of the following residues:



-continued







wherein R^3 represents a hydrogen atom or a lower alkyl group, X^1 and X^2 each represent a hydrogen atom, a halogen atom or a trifluoromethyl group and Y represents O or S.

9. A psychotropic composition comprising a compound of claim 1 in combination with a pharmaceutically acceptable excipient, said compound being present in a psychotropically effective amount.

4,397,854

SUBSTITUTED 6-PHENYL-3(2H)-PYRIDAZINONES USEFUL AS CARDIOTONIC AGENTS

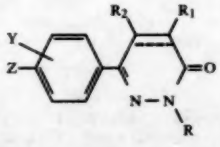
Ila Sircar, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 263,643, May 14, 1981. This application Nov. 30, 1981, Ser. No. 325,719

Int. Cl.³ A61K *31/50;* **C07D** *237/04, 237/14*

U.S. Cl. 424—250 **5 Claims**

1. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form in a pharmaceutically acceptable carrier to such patient an effective amount of a compound having the structural formula



wherein represents a double or single bond between two carbon atoms; R is hydrogen, lower alkyl, dialkylaminoalkyl or hydroxyalkyl; R_1 and R_2 are independently hydrogen, lower alkyl or phenylmethyl with the proviso that at least one of them is hydrogen; Y and Z are independently hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, phenoxy, CN or NR_3R_4 wherein R_3 is hydrogen or lower alkyl and R_4 is hydrogen, lower alkyl or

wherein R_5 is hydrogen or alkyl containing one or two carbon atoms; wherein lower alkyl and lower alkoxy contain one to three carbon atoms; and the pharmaceutically acceptable salts thereof.

4,397,855

4-(SUBSTITUTED)-α, α-DIMETHYL-1-PIPERAZINE PENTANOIC ACIDS AND DERIVATIVES AS ANTI-ARTERIOSCLEROTIC AGENTS AND METHOD

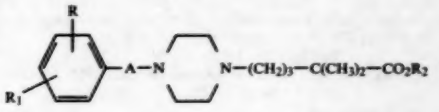
Ila Sircar, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 26, 1981, Ser. No. 277,578

Int. Cl.³ A61K *31/495;* **C07D** *295/10, 295/16*

U.S. Cl. 424—250 **17 Claims**

1. A compound having the structural formula



wherein R and R_1 may be the same or different and are hydrogen, halogen, alkyl of from 1 to 6 carbon atoms, trifluoro methyl, carboxylic acid of from 1 to 3 carbon atoms, or 1-hydroxyalkyl of from 1 to 3 carbon atoms; R_2 is hydrogen, alkyl of from 1 to 3 carbon atoms, or a pharmaceutically acceptable cation; A is a direct bond, methylene, benzal, CH=CH—CO, and the pharmaceutically acceptable salts thereof.

4,397,856

ANALGESIC 4-HYDROXY-3-QUINOLINECARBOXAMIDES

André Allais, Gagny; Francois Clemence, Paris; Roger Deraedt, Pavillons sous Bois, and Odile Lemartret, Paris, all of France, assignors to Roussel Uclaf, Paris, France

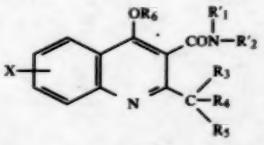
Filed May 12, 1981, Ser. No. 262,952

Claims priority, application France, May 19, 1980, 80 11100

Int. Cl.³ A61K *31/47;* **C07D** *215/56*

U.S. Cl. 424—251 **27 Claims**

1. A compound selected from the group consisting of compounds of the formula



wherein X is the 5,6,7 or 8 position and is selected from the group consisting of hydrogen, halogen, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 4 carbon atoms, CF_3O—, CF_3S— and —CF_3—, R_1' is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R_2' is selected from the group consisting of hydrogen, thiazolyl, 4,5-dihydrazolyl, pyridinyl, oxazolyl, isoxazolyl, imidazolyl, pyrimidyl, tetrazolyl, thienyl, benzothiazolyl and phenyl, all optionally substituted with one or more members of the group consisting of (a) halogens, (b) alkyl of 1 to 4 carbon atoms optionally substituted with NH_2, —NHAlK or —N—$(AlK)_2$ and AlK is alkyl of 1 to

3 carbon atoms, (c) phenyl, (d) alkoxy of 1 to 4 carbon atoms, (e) —OH, (f) —CF_3 and (g) —NO_2 or R_1' and R_2' together with the nitrogen atom to which they are attached form thiazolylidene, R_3 is selected from the group consisting of hydrogen, halogen and alkyl of 1 to 4 carbon atoms, R_4 is selected from the group consisting of hydrogen and halogen, R_5 is halogen with the proviso that R_3, R_4 and R_5 can not all be fluorine and R_6 is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and an acyl of an organic carboxylic acid of 2 to 8 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts and their salts with non-toxic, pharmaceutically acceptable bases.

10. An analgesic composition comprising an analgesically effective amount of at least one compound of claim **1** and a pharmaceutical carrier.

19. A method of relieving pain in warm-blooded animals comprising administering to warm-blooded animals an analgesically effective amount of at least one compound of claim **1**.

4,397,857

AZABICYCLOOCTANE-CARBOXYLIC ACIDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND ANTIHYPERTENSIVE USE THEREOF

Michel Vincent, Bagneux; Georges Remond, Versailles, and Michel Laubie, Vaucresson, all of France, assignors to Science Union et Cie, Neuilly-sur-Seine, France

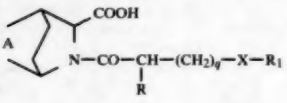
Filed Oct. 20, 1981, Ser. No. 313,184

Claims priority, application France, Oct. 21, 1980, 80 22438

Int. Cl.³ A61K *31/44;* **C07D** *221/22*

U.S. Cl. 424—263 **11 Claims**

1. A compound having the formula



(I)

in which

A represents a vinylene or dimethylene radical,

q is 0 or 1,

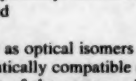
R represents a lower alkyl radical which can carry an amino group,

X represents —S— or —NH—,

R_1 represents a hydrogen atom or a radical of formula

R_2 represents a hydroxyl or a lower alkoxy group,

R_3 represents a hydrogen atom, a straight or branched alkyl radical, a cycloalkylalkyl radical or a phenylalkyl radical each having no more than a total of 8 carbon atoms, or a radical of formula



in which

R_4 is H, a lower alkyl radical or a (C_3 to C_6)-cycloalkyl radical,

R_5 is H, a (C_3 to C_6)-cycloalkyl radical or a (lower alkoxy)-carbonyl radical, and

p is 1 or 2,

in their racemic form or as optical isomers or the salt thereof obtained with a therapeutically compatible organic or mineral base or the addition salt of the compound of formula (I) in which X is NH with a therapeutically compatible mineral or organic acid.

9. A method for treating a patient suffering from hypertension, which comprises administering to said patient a therapeutically effective dose of a compound according to claim **1**.

4,397,858

TREATMENT OF RHEUMATISM AND ARTERIOSCLEROSIS WITH N-HALOGENOPHENYL-BENZISOTHIAZOLES

Andre Welter; Hans-Heiner Lautenschläger; Eugen Etschenberg, all of Cologne, and Sigurd Leyck, Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

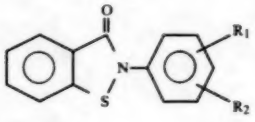
Filed Oct. 22, 1981, Ser. No. 313,810

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041036

Int. Cl.³ A61K *31/425*

U.S. Cl. 424—270 **3 Claims**

1. A method for the treatment and prophylaxis of arthritis, inflammation and/or arteriosclerosis and resulting illnesses in humans or animals, which comprises administering to an animal an effective amount of a benzisothiazole corresponding to the following general formula:



I

wherein R_1 represents a radical selected from the group consisting of chlorine, fluorine and bromine, and R_2 represents a radical selected from the group consisting of hydrogen, chlorine, fluorine and bromine.

4,397,859

INSECTICIDE

Quinton A. Geering, Cambridge, England, assignor to Fisons Limited, England

Continuation of Ser. No. 3,944, Jan. 16, 1979, abandoned, which is a continuation of Ser. No. 727,868, Sep. 29, 1976, abandoned, which is a continuation of Ser. No. 552,144, Feb. 24, 1975, abandoned, which is a continuation of Ser. No. 335,425, Feb. 23, 1973, abandoned. This application May 4, 1981, Ser. No. 261,134

Claims priority, application United Kingdom, Feb. 25, 1972, 8723/72

Int. Cl.³ A01N *43/76, 43/80*

U.S. Cl. 424—272 **8 Claims**

1. A synergistic insecticidal composition consisting essentially of:

(A) 2,2-dimethyl-1,3-benzodioxol-4-yl N-methylcarbamate, and

(B) a pyrethrin selected from the group consisting of natural pyrethrin, resmethrin, tetramethrin and bioresmethrin, said natural pyrethrin comprising a mixture of pyrethrins I and II, cinerins I and II and jasmolins I and II; wherein the proportion of (A) to (B) is from 10:1 to 1:1 by weight.

4,397,860

BENZODIOXANYL IMIDAZOLINE COMPOUNDS, COMPOSITIONS AND USE

Christopher B. Chapleo, Swanland, and Peter L. Myers, Princes Risborough, both of England, assignors to Reckitt & Colman Products Limited, London, England

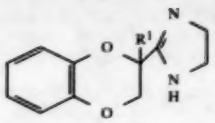
Filed Jan. 18, 1982, Ser. No. 340,461

Claims priority, application United Kingdom, Jan. 30, 1981, 8102906; Jul. 28, 1981, 8123277

Int. Cl.³ A61K *31/415;* **C07D** *405/04*

U.S. Cl. 424—273 R **13 Claims**

1. A compound of formula:



wherein R^1 is alkyl C_{1-7}, alkenyl C_{2-4}, cycloalkenyl C_{4-7}; and its non-toxic salts.

8. A pharmaceutical composition for selective presynaptic α_2-adrenoreceptor antagonist use comprising a compound as claimed in claim **1**, or a non-toxic salt thereof in an amount effective for said use together with a pharmaceutically acceptable diluent or carrier.

4,397,861

N- AND CARBOXYL DERIVATIVES OF THIENAMYCIN

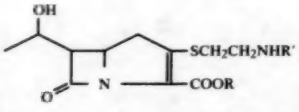
Burton G. Christensen, Metuchan; John Hannah, Matawan; William J. Leanza, Berkeley Heights, and David H. Shih, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 160,720, Jun. 18, 1980, abandoned, which is a continuation of Ser. No. 861,150, Dec. 16, 1977, abandoned, which is a continuation of Ser. No. 733,613, Oct. 18, 1976, abandoned, which is a continuation of Ser. No. 634,295, Nov. 21, 1975, abandoned. This application Nov. 16, 1981, Ser. No. 321,497

Int. Cl.[3] **C07D** *487/04;* **A61K** *31/40*

U.S. Cl. 424—274 **4 Claims**

1. A compound having the structural formula:



wherein R is a member selected from the group consisting of loweralkyl which may be substituted with loweralkoxy, mono- and diloweralkylamino, loweralkanoyloxy, loweralkanoylthio, loweralkanoylamino, loweralkylthio and pivaloxy; loweralkenyl; benzyl which may be substituted with loweralkyl, loweralkoxy, phenoxy, halo, nitro and pivaloxy; benzhydryl, phenyl, nitrophenyl, phenacyl and bromophenacyl; and R′ is a member selected from the group consisting of:

wherein R″ is a member selected from the group consisting of hydrogen; loweralkyl (R″ is not methyl) which may be substituted by hydroxy, loweralkoxy, phenyl, phenoxy, halo, amino, diloweralkylamino and guanidino; loweralkenyl, thionitrophenyl, benzyloxy, nitrobenzyloxy, loweralkoxybenzyloxy, loweralkoxy, haloloweralkoxy, loweralkylamino, loweralkylthio and thiophenyl.

3. An antibiotic pharmaceutical composition consisting essentially of a therapeutically effective amount of a compound according to claim **1** and a pharmaceutical carrier therefor.

4,397,862

GASTROINTESTINAL SPARING THIOESTER DRUGS

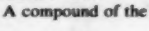
Edward Mroszczak, Mountain View, and Richard Runkel, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 13, 1981, Ser. No. 310,554

Int. Cl.[3] **A61K** *31/40;* **C07D** *487/04*

U.S. Cl. 424—274 **6 Claims**

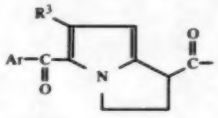
1. A compound of the formula:



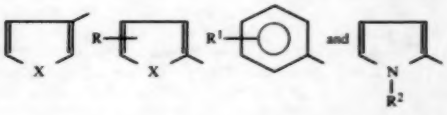
wherein

R′ is hydrogen, alkyl, -COOH or its pharmaceutically acceptable salts, —alkylene-COOH or its pharmaceutically acceptable salts, —alkylene-SO_2H or its pharmaceutically acceptable salts, —alkylene-SO_3H or its pharmaceutically acceptable salts, or —alkylene-CH_2OH; and

A is the acyl moiety of a pharmaceutically acceptable carboxcylic acid of the formula:



wherein R^3 is hydrogen, halo, or lower alkyl; and Ar is selected from the group consisting of:



in which X is O or S;

R is hydrogen, methyl, chloro or bromo;

R^1 is hydrogen, a lower alkyl group having 1 to 4 carbon atoms; a lower alkoxy group having from 1 to 4 carbon atoms, chloro, fluoro or bromo; and

R^2 is hydrogen or a lower alkyl group having from 1 to 4 carbon atoms.

6. A method for inhibiting inflammation in human beings which method comprises administering to a subject in need of such treatment a therapeutically effective amount of, or a pharmaceutical composition containing a therapeutically effective amount of, the compound of claim **1** or a pharmaceutically acceptable acid addition salt thereof.

4,397,863

INHIBITION OF RESPIRATORY SYNCYTIAL VIRUS-INDUCED CELL FUSION BY AMIDINO COMPOUNDS

Richard R. Tidwell; Edward J. Dubovi, and Joachim D. Geratz, all of Chapel Hill, N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Division of Ser. No. 181,341, Aug. 26, 1980, Pat. No. 4,324,794. This application Apr. 8, 1982, Ser. No. 366,652

Int. Cl.[3] **A61K** *31/40, 31/415, 31/155*

U.S. Cl. 424—274 **5 Claims**

1. A method for the treatment of respiratory syncytial virus-induced cell fusion which comprises administering to a host in need of said treatment to an effective amount of an aromatic amidine compound selected from the group consisting of 5-amidinoindole and 5-amidino-1-methylindole.

4,397,864

2-ARYLPROPYL ETHER OR THIOETHER DERIVATIVES AND INSECTICIDAL AND ACARICIDAL AGENTS CONTAINING SAID DERIVATIVES

Kiyoshi Nakatani, Tokyo; Satoshi Numata; Tsuneo Inoue, both of Yokohama; Kenji Kodaka, Fujisawa; Tsutomu Ishii, Kawasaki; Teruhiko Toyama; Hajime Tachibana, both of Chigasaki; Takatoshi Udagawa, and Masatoshi Gohbara, both of Yokohama, all of Japan, assignors to Mitsuitoatsu Chemicals Inc., Tokyo, Japan

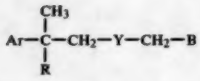
Filed Apr. 14, 1981, Ser. No. 254,135

Claims priority, application Japan, May 2, 1980, 55-057872; Oct. 24, 1980, 55-148279

Int. Cl.³ A61K *31/36*; C07D *317/54*; A61K *31/085*

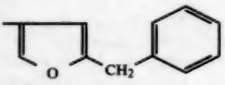
U.S. Cl. 424—282 16 Claims

1. A 2-arylpropyl ether or thioether derivative represented by the following formula (I):



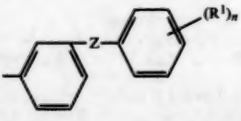
(I)

wherein Ar stands for an aryl group selected from the group consisting of phenyl, naphthyl, anthryl and phenanthryl groups, which may be unsubstituted or substituted with the same or different substituents selected from the group consisting of a halogen atom; an alkyl, haloalkyl, phenyl, alkoxy, haloalkoxy, cycloalkoxy, phenoxy, alkenyl, halcalkenyl, alkynyl, haloalkynyl, alkoxyalkyl, alkenyloxy, haloalkenyloxy, alkynyloxy, haloalkynyloxy, alkylthio, haloalkylthio, alkylsulfoxyl, acyl, alkoxyalkoxy, alkenylthio, alkoxycarbonyl, haloalkoxycarbonyl, alkynyloxycarbonyl, alkenyloxycarbonyl, nitro, nitrile, haloalkenylthio, methylenedioxy, 3,4-difluoromethylenedioxy, 3,4-difluoroethylenedioxy, or 3,4-trifluoroethylenedioxy group; and a polymethylene group having 3 to 5 carbon atoms, R stands for a methyl or ethyl group, Y stands for an oxygen or sulfur atom, and B stands for a group represented by the following formula (II):



(II)

or the following formula (III):



(III)

wherein Z stands for an oxygen or sulfur atom or a carbonyl or methylene group, R^1 stands for a hydrogen or halogen atom or a lower alkyl group or a lower alkoxy group, and n is an integer of from 1 to 5 with the proviso that when n is 2 or more, the groups R^1 may be the same or different.

15. A method of combatting insect pests and/or acarids comprising contacting the insect pests or acarids with a pesticidally effective amount of a compound in accordance with one of claims 1, 2 or 3.

4,397,865

METHOD FOR PREVENTING RENAL PAPILLARY NECROSIS WITH PROSTAGLANDINS

Andre Robert, Kalamazoo, and George A. Elliott, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 12, 1982, Ser. No. 433,587

Int. Cl.³ A61K *31/19, 31/215*

U.S. Cl. 424—317 5 Claims

1. A method for the prevention of renal papillary necrosis induced by non-steroidal anti-inflammatory compounds (NOSAC) in a mammal susceptible to said necrosis comprising systemically administering to said mammal an amount of a renal cytoprotective prostaglandin effective to prevent said necrosis.

4,397,866

PROCESS FOR INCREASING GLYCINE LEVELS IN THE BRAIN AND SPINAL CORD

Richard J. Wurtman, Waban, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 7, 1979, Ser. No. 36,925

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 4 Claims

1. The process for increasing the amount of glycine in the brain and spinal cord of a patient suffering from a natural or induced deficiency of glycine in the brain or spinal cord which comprises administering to a patient a neutral amino acid composition comprising L-threonine, a precursor of L-threonine or mixtures thereof.

4,397,867

TREATMENT OF ARTHRITIC COMPLAINTS

David R. Blake, Bath, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,573

Claims priority, application United Kingdom, Jun. 19, 1981, 8119006

Int. Cl.³ A61K *31/16*

U.S. Cl. 424—320 7 Claims

1. A method for the treatment of rheumatoid arthritic and like diseases involving joint inflammation, which comprises administering to patents in need of such administration desferrioxamine in a therapeutically effective dosage over a prolonged period sufficient to reduce joint inflammation.

4,397,868

METHOD OF TREATING ATHEROSCLEROSIS WITH TRISUBSTITUTED UREAS

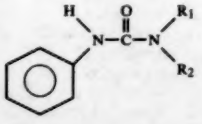
Vern G. DeVries, Ridgewood, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 26, 1982, Ser. No. 342,690

Int. Cl.³ A61K *31/17*

U.S. Cl. 424—322 8 Claims

1. A method of treating atherosclerosis, reducing the cholesterol ester content of the arterial wall, inhibiting atherosclerotic lesion development and/or treating hyperlipidemia in a mammal in need of such treatment which comprises administering to said mammal an effective amount of a compound of the formula:



wherein R_1 and R_2 are different and are independently selected from the group consisting of C_4–C_{12} alkyl, C_4–C_{12} alkenyl, C_4–C_{12} alkynyl, C_4–C_{12} cycloalkyl, C_4–C_{12} cycloalkylalkyl,

C_7–C_{14} aralkyl, and C_7–C_{14} aralkyl in which an aromatic ring bears at least one substituent selected from the group consisting of C_1–C_{10} alkyl, C_1–C_{10} alkoxy, phenoxy, benzyloxy, methylenedioxy, C_1–C_4 alkylthio, phenyl, halo, trihalomethyl, adamantyl, C_1–C_4 carboalkoxy, and nitro.

4,397,869

COMBATING FUNGI WITH N-SULPHENYLATED UREAS

Engelbert Kühle, Berg.-Gladbach; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

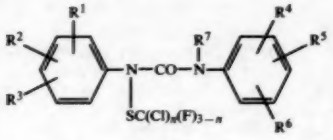
Filed Aug. 7, 1981, Ser. No. 290,899

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032327

Int. Cl.³ A01N *29/10*; C07C *127/19*

U.S. Cl. 424—324 **12 Claims**

1. An N-sulphenylated urea of the formula



in which

R^1 to R^6 each independently is hydrogen, halogen, nitro, cyano, alkyl, alkoxy, alkylmercapto, trihalogenomethyltrihalogenomethoxy or trihalogenomethylmercapto,

R^7 is hydrogen or alkyl, and

n is 0, 1 or 2,

at least one of the phenyl rings being unsubstituted.

11. A method of combating fungi comprising applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,397,870

PROCESS FOR PROLONGING RETENTION OF EMULSION PARTICLES IN THE BLOODSTREAM

Henry A. Sloviter, Philadelphia, Pa., assignor to The University of Pennsylvania, Philadelphia, Pa.

Filed Jul. 27, 1982, Ser. No. 402,449

Int. Cl.³ A61K *31/13, 31/02*

U.S. Cl. 424—325 **15 Claims**

1. A process for prolonging the stability and retention of coated water insoluble oxygen transporting particles infused into the bloodstream of animals and humans comprising at least one subsequent injection of the same substance which coats the infused particles.

4,397,871

AMUSEMENT DEVICE FOR TRANSMITTING MESSAGES

Burton C. Meyer, Downers Grove, and Beth E. Luecke, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sep. 21, 1981, Ser. No. 303,904

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—5 **8 Claims**

1. An amusement device for transmitting a secret message, comprising:

an edible core member for receiving and displaying the secret message, and

a wrapper of a pressure sensitive transfer sheet sealingly enveloping the core member, said wrapper having an inside surface in contact with the core member and an exposed outside surface, said inside surface of said wrapper having a portion generally uniformly coated with an edible pressure sensitive transfer substance adapted to transfer from said wrapper to the core member in a pattern corresponding to the pattern of application of pressure to the outside surface of said wrapper.

4,397,872

HIGH GRAVITY BREWING USING LOW GEL POINT RICE ADJUNCTS

Marcella C. Stubits, St. Louis; James Teng, St. Louis County, and Barrett L. Scallet, Clayton, all of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Jul. 21, 1981, Ser. No. 285,624

Int. Cl.³ C12C *11/00, 7/04*

U.S. Cl. 426—16 **5 Claims**

1. In a method of brewing beer wherein wort is produced from a mash consisting essentially of water, malt, and a substantial amount of rice as an adjunct, and the malt is present in a greater amount than the rice, the improvement comprising using as said rice, strains of rice having a gel point of 70° C. or less, and using increased amounts of malt and rice in direct proportions in the mash to obtain a wort having a cold wort concentration of 16° Balling or higher to produce a high gravity beer, said cold wort concentration of 16° Balling or higher resulting solely from the increased amounts of malt and rice in the mash.

4,397,873

DARK-COLORED FREEZE DRIED COFFEE

Stephen F. Hudak, Croton-on-Hudson, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,280

Int. Cl.³ A23F *5/32*

U.S. Cl. 426—385 **4 Claims**

1. A process for producing a dark-colored freeze dried coffee which comprises:

(a) rapidly chilling an aqueous coffee extract to a temperature between −2° C. and −5° C. whereby a slush forms;

(b) heating said slushed extract to a temperature slightly below 0° C. whereby some of the slush begins to melt;

(c) re-chilling the heated extract of step (b) to a temperature from −2° C. to −5° C. and repeating the heating and re-chilling steps one or more times;

(d) further rapidly chilling said extract to a temperature below its eutectic point whereby the coffee extract is frozen solid; and

(e) freeze drying the frozen extract.

4,397,874

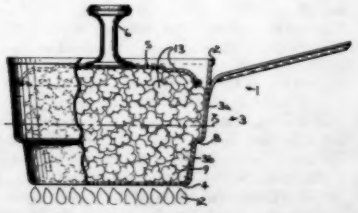
POPCORN POPPING

Eugene G. Piotrowski, 3308 Algoma St., Stevens Point, Wis. 54481

Filed Apr. 6, 1981, Ser. No. 251,276

Int. Cl.³ A23B *3/04*; A23L *1/18*

U.S. Cl. 426—450 **1 Claim**



1. The method of popping popcorn, comprising:

(a) providing a pan and freely removable cover with the pan having an upper rim, a side wall and bottom with the rim

and upper side wall portion forming a cross sectional pan area slightly greater than that of the cover, and with the side wall having a cover-receiving stop below the midline between the pan rim and bottom,

(b) introducing solid popcorn kernels and liquid cooking oil into said pan,

(c) placing said cover on said stop to form, with the lower side wall portion therebelow and said bottom, an expandable substantially enclosed small popping chamber having an initial volume less than one-half the total pan volume,

(d) applying a relatively low preheat to said pan to bring said small chamber up to popping temperature,

(e) then applying a heat higher than said preheat to said pan to cause corn to pop and to thereby increase in volume and fill said small enclosed chamber up to said cover,

(f) then continuously enlarging and expanding said enclosed chamber upwardly to approximately the said total pan volume while shielding the area surrounding said pan against splatter by continuing to heat said pan so that the expanding solid popped corn causes said cover to progressively slide axially of said pan and along said upper wall portion, which functions as a splatter shield means,

(g) and finally terminating the application of heat when said cover slidingly approaches said upper rim so that all of the popped corn is confined to the said enlarged and expanded enclosed chamber within said pan.

4,397,875

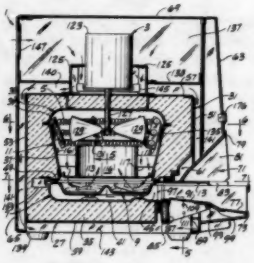
METHOD OF HEATING FOOD

John W. Gilliom, Wooster, Ark., assignor to UMC Industries, Inc., Stamford, Conn.

Division of Ser. No. 185,210, Sep. 8, 1980. This application Apr. 14, 1981, Ser. No. 254,165

Int. Cl.³ A23L *1/01*

U.S. Cl. 426—523 **8 Claims**



1. The method of heating food in a convection oven, comprising:

placing the food in a pan;

inserting the pan containing said food through an access opening in a convection oven into a compartment in the oven at the lower end of a ductwork system in the oven, said ductwork system comprising an air delivery passage, adapted for delivery of air from a lower end thereof down into the pan in said compartment and an air return passage extending up from the lower end of said ductwork system, interengaging the pan, all around the pan, with the lower end of said ductwork system to cause the pan to cooperate with the air delivery and air return passages in the ductwork system and to form a generally closed passage, including the pan and the air delivery and air return passages, through which heated air is confined to flow from the air delivery passage to the air return passage, and

flowing heated air down through the air delivery passage into the pan, through the pan, and thence up and out of the pan through the air return passage, with substantially all of the heated air exiting from the lower end of the air delivery passage flowing through the pan and over and around the food in the pan and thence up and out of the pan through the air return passage.

4,397,876

SEAFOOD FLAVOR

Thomas H. Parliment, New City, and Denise A. Herzing-Giordano, North Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 921,934, Jul. 3, 1978, abandoned. This application Nov. 6, 1981, Ser. No. 318,900

Int. Cl.³ A23L *1/226*

U.S. Cl. 426—534 **4 Claims**

1. A process for imparting to seafood-like foodstuffs the prominent flavor or flavor-note of seafood which comprises adding to the foodstuff an effective amount of cis-4-heptenol.

4,397,877

HEAT TREATMENT OF ACTIVE DRIED YEAST AND PRODUCT THEREOF

Arthur H. Freytag, Longmont, Colo., assignor to The Great Western Sugar Company, Denver, Colo.

Filed Dec. 5, 1980, Ser. No. 213,362

Int. Cl.³ C12G *1/00*; C12N *1/18, 1/16*; C12P *7/06*

U.S. Cl. 426—11 **14 Claims**

1. A method of treating previously dried yeast containing less than about 20% moisture, by weight, to increase its activity when used in fermentation processes which comprises the steps of: heating said previously dried, active dried yeast to a temperature in the range of about 30° C. to about 60° C.; and maintaining said yeast at about 30° C. to about 60° C. for at least 2 hours,

whereby the resulting treated yeast exhibits increased activity when used in fermentation process.

4,397,878

PROCESS FOR PRODUCING A CREAM CHEESE-LIKE FOOD

Kaoru Koide; Yoshiki Yoneda, and Kenkichi Musashi, all of Higashimurayama, Japan, assignors to Meiji Milk Products Company Limited, Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,656

Claims priority, application Japan, Jul. 15, 1980, 55-095708

Int. Cl.³ A23C *19/12, 9/12*

U.S. Cl. 426—40 **10 Claims**

1. A process for producing a cream cheese-like food comprising:

mixing casein, an oil or fat, an emulsifying agent, lactose, calcium salt in an amount of 4–24 mg of calcium ion per gram of casein, water and an orthophosphate to obtain a liquid mixture,

pasteurizing the resulting liquid mixture,

homogenizing the pasteurized liquid mixture,

cooling the homogenized liquid mixture to 20°–32° C. to obtain a liquid emulsion of an oil-in-water,

adding a starter and rennet to the emulsion,

fermenting the emulsion at 20°–32° C. until the pH of the mixture reaches 5.4–5.9,

pasteurizing the fermented mixture in the pH range of 5.4–5.9,

adding a stabilizer and glucono δ-lactone to the fermented mixture,

pasteurizing the mixture, and

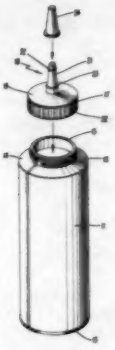
charging the pasteurized mixture into containers.

4,397,879

APPARATUS FOR AND METHOD OF MAKING FUNNEL CAKES

Warren Wilson, 55 Saddle River Rd., Woodcliff Lake, N.J. 07675

Filed Jul. 14, 1982, Ser. No. 398,233
Int. Cl.³ B65D *85/00, 47/06, 47/14;* A21D *10/04*
U.S. Cl. 426—115 16 Claims



1. In combination, a squeeze bottle, a dry, non-yeast, non-shortening funnel cake mix of particulate materials in the bottle, the funnel cake mix including wheat flour, sugar, dried egg, dry milk, leavening and salt, an opening in the bottle, a selectively removable and replaceable cover for the opening, the cover when removed from the opening enabling a liquid to be poured into the bottle and, when placed on the opening, enabling a batter formed by the mixture and the liquid to be shaken without escape from the bottle, means adapted to form a spout for enabling batter formed in the bottle to be dispensed from the bottle, the spout being closed while the liquid is being shaken in the bottle and being opened to enable the batter to be dispensed through it from the bottle, the spout being shaped as a funnel extending from and integral with the cover to provide sufficient flow impedance to batter flowing through the funnel to enable controlled dispensing of the batter from the bottle when the bottle is squeezed and the funnel end is below the batter, the spout, bottle and batter being made of materials and being arranged such that the batter flows through the spout without substantially sticking to the spout or bottle when the bottle is squeezed and the spout is below the batter.

4,397,880

ICE CREAM PRODUCT CONTAINING COOKIE BITS

William G. Crothers, Princeton, N.J., assignor to Deer Park Baking Co., Hammonton, N.J.

Filed Apr. 19, 1979, Ser. No. 31,402
Int. Cl.³ A23G *9/00;* A21D *13/00*
U.S. Cl. 426—565 6 Claims

1. An ice cream product comprising:

a. ice cream; and in combination with

b. a plurality of cookie bits dispersed in said ice cream each of said bits being formed into a cone-shape, wherein said bits comprise flour, sugar and shortening and wherein the sugar;shortening ratio is from 1.5:1 to 2.5:1, and wherein said cookie bit has a count per pound of about 1,000 to 1,500, and wherein said bits are present in an amount of 8 to 10 percent by weight of the ice cream, whereby the cookie bits retain their structural integrity blended with the ice cream.

4,397,881

COOKIE BITS

William Crothers, Princeton, N.J., assignor to Deer Park Baking Co., Hammonton, N.J.

Continuation-in-part of Ser. No. 31,402, Apr. 19, 1979. This application Mar. 5, 1981, Ser. No. 240,895
The portion of the term of this patent subsequent to Aug. 9, 2000, has been disclaimed.
Int. Cl.³ A23G *9/00;* A21D *13/00*
U.S. Cl. 426—565 9 Claims

1. An ice cream product comprising:

a. ice cream;

b. a plurality of cookie bits of a count of about 1,500 to 2,500/lb. dispersed in said ice cream, each of said bits being formed into a cylindrical body and conical top portion, and comprising flour, sugar, and shortening, and wherein the sugar: shortening ratio is from 1.5:1 to 2.5:1, and wherein the bit is porous so as to absorb moisture in ice cream but retain its shape after such absorption.

4,397,882

PROCESS FOR THE PRODUCTION OF HARD PAPER

Arnold Franz; Ernst Schneider, both of Troisdorf-Spich, and Gregor Jakobshagen, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,503
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022431
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—391 9 Claims

1. A process for the preparation of hard paper by impregnating lengths of cellulose-containing material with a plasticizer-containing phenol- and cresol-resol resin impregnating solution according to a one-step method, subsequent drying, and then hardening of the resin-impregnated paper, characterized in that the mixed resin impregnating solution consists of a mixture of a 50–80% by weight phenol-resol resin solution with a 40–70% by weight cresol-resol resin solution, to which has been admixed, before impregnation, between 20 and 35% by weight of plasticizer based on the sum total weight of solid resins and plasticizer, additionally 4–12% by weight of water, based on the sum total weight of solid resins and plasticizer in the impregnating solution and an organic water-miscible solvent in an amount up to a weight ratio of water:solvent ranging from 1:1 to 1:2.

4,397,883

ELECTROGRAPHIC RECORDING MATERIAL

Irving Serlin, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1980, Ser. No. 218,868
Int. Cl.³ B41M *5/00;* G01D *15/34*
U.S. Cl. 427—14.1 13 Claims

13. A method of electrographic recording comprising forming an electrostatic charge pattern on an electrically insulting layer of an electrographic recording medium, developing the charge pattern by application of a toner and fixing the toner by heat or pressure, wherein the electrically insulating layer is formed from an intimate blend of an aqueous vinyl ester interpolymer latex and up to 500 parts by weight of a finely divided pigment per 100 parts by weight of interpolymer latex, wherein the interpolymer latex has a pH in the range of about 6.2 to about 7.5 and consists essentially of an acid modified interpolymer of a C_4–C_6 vinyl ester and a protective colloid, wherein the acid modified vinyl ester interpolymer comprises from about 3 to about 7 weight percent of carboxylic acid groups supplied by an interpolymerized C_4–C_{10} vinylene monobasic carboxylic acid monomer of the formula RCH=CHCOOH where R is a hydrocarbyl, hydrocarbyloxy or hydrocarbyloxycarbonyl group and wherein the concentration of protective colloid is in the range of about 0.2 to about

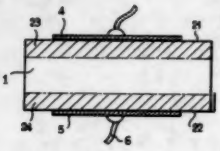
0.8 parts by weight per 100 parts by weight of the interpolymer.

4,397,884

PROCESS FOR STABILIZING IN TIME A PIEZOELECTRIC RESONATOR

Georges Dube, Sartrouville, France, assignor to Compagnie d'Electronique et de Piezo-Electricite, Sartrouville, France

Filed Nov. 19, 1981, Ser. No. 323,075
Claims priority, application France, Nov. 21, 1980, 80 24803
Int. Cl.³ B05D 3/12
U.S. Cl. 427—38 8 Claims



1. A process for forming a piezoelectric resonator which has time stabilized oscillation characteristics comprising the steps of:

forming a block of material in the crystalline state;

performing mechanical finishing operations on said block of crystalline material;

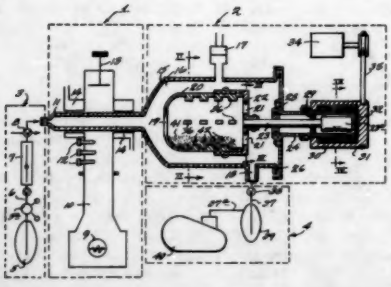
subjecting at least one face of said block of crystalline material to ion implantation wherein said ions are one of helium, lithium and beryllium in order to transform said crystalline material on said at least one face of said block to the vitreous state to a predetermined depth of less than 1 micron.

4,397,885

METHOD AND APPARATUS FOR TREATING FLUORESCENT SUBSTANCE

Yoshimi Akai, Yokohama; Akira Taya, Kawasaki; Leo Mori, Yokohama; Kazuo Narita, Yokohama, and Masahiko Hirose, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 22, 1981, Ser. No. 285,320
Claims priority, application Japan, Aug. 22, 1980, 55-114686
Int. Cl.³ B05D 3/06
U.S. Cl. 427—38 12 Claims



1. A method for treating a fluorescent substance, said method comprising the steps of:

producing gas plasma in a first region; and

directing active species in the gas plasma to said fluorescent substance in a second region so as to bring the active species into contact with said fluorescent substance, said fluorescent substance in said second region being separated from said first region so as to be separated from ultraviolet radiation produced in said plasma producing step.

9. An apparatus for treating a fluorescent substance comprising:

means for generating microwaves;

waveguide means, connected to said microwave generating means, for transmitting microwaves;

discharge means, crosswise penetrating said waveguide means, for producing a plasma therein;

gas supplying means, connected to one end of said discharge means, for supplying gas thereinto;

a treatment chamber connected to the other end of said discharge means, said fluorescent substance being disposed in said treatment chamber;

exhaust means, connected to the treatment chamber, for exhausting the gas therefrom;

a container rotatably supported in said treatment chamber for holding the fluorescent substance; and

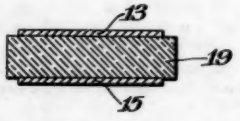
means for rotating said container.

4,397,886

METHOD FOR MAKING A CERAMIC INTERGRANULAR BARRIER-LAYER CAPACITOR

Stephen M. Neirman, and Ian Burn, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 261,065, May 6, 1981. This application Jan. 15, 1982, Ser. No. 357,940
Int. Cl.³ B05D 5/12
U.S. Cl. 427—80 5 Claims



1. A method for making a ceramic intergranular barrier layer type capacitor comprising:

(a) preparing a ceramic start mixture consisting essentially of strontium, titanium, a strontium-titanate-donor and manganese, said donor being selected from large cations A, small cations B and combinations thereof, said start mixture being adjusted to form during sintering a strontium titanate ceramic compound,

$$Sr_{1-\frac{3}{2}x-\frac{1}{2}y-w}A_xB_yB_wMn_zTi_{1-y-w}O_3,$$

wherein x, y and w are the atomic proportions, respectively, of said donor cations having a charge of +3, +5 and +6, so that both charge balance and large/small cation balance may be established by strontium vacancies,

$$(V_{Sr})_{\frac{1}{2}x+\frac{1}{2}y+w}$$

therein, wherein x+y+w is from 0.003 to 0.021 and wherein z lies between 0.00005 and 0.0025;

(b) forming a body of said mixture;

(c) sintering said body in an inert atmosphere to maturity; and

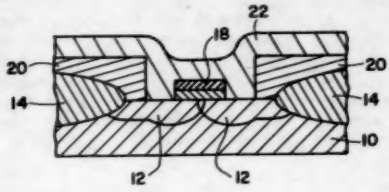
(d) forming a mixture of oxidizing agents and silver particles, applying a coat of said mixture to selected surface portions of said sintered body, and heating said coated body at a temperature of about 900° C.

4,397,887

POSTPONED ROM PROGRAMMING

Haluk M. Aytac, Berkeley, Calif., and John F. MacDonald, Orem, Utah, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 18, 1982, Ser. No. 409,010
Int. Cl.³ B05D 5/12; H01L 7/44; B44C 1/22; C03C 15/00
U.S. Cl. 427—85 4 Claims



1. In the fabrication of a silicon semiconductor field effect memory device wherein spaced apart source and drain areas are formed on a substrate with a channel extending therebetween and a control gate is formed above the channel with an oxide insulating layer covering the gate and device, an improvement to the process that allows the device to be converted into a normally conducting device late in the fabrication process comprising:

masking and etching the device so as to create openings to the source and drain areas on the substrate beside the control gate; and

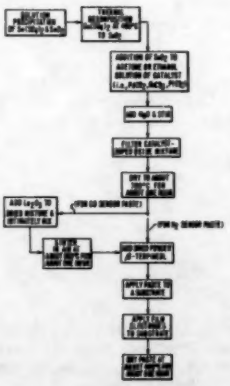
doping said source and drain areas through said openings so as to expand said areas toward each other, under said gate, until they form a continuous conduction path.

4,397,888

THICK FILM SENSOR FOR HYDROGEN AND CARBON MONOXIDE

Lymperios N. Yannopoulos, Churchill Boro., and Chikara Hirayama, Franklin Township, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 224,873, Jan. 14, 1981, abandoned. This application Mar. 10, 1982, Ser. No. 356,683
Int. Cl.³ B05D 5/12
U.S. Cl. 427—86 4 Claims



1. A method of preparing a stannic oxide gas detecting film device responsive primarily to H_2 present in an oxygen containing gas environment, comprising the steps of,

solution precipitation of $Sn(SO_4)_2$ and SnO_2,

thermally decomposing the $Sn(SO_4)_2$ to SnO_2,

adding the SnO_2 to a catalyst solution of acetone or ethanol,

adding a sintering agent to the catalyst solution containing SnO_2 and stirring,

filtering the resulting catalyst dopeed oxide mixture,

drying the filtered mixture to produce a dry powder,

mixing the resulting dry powder with β-terpineol to form a paste,

applying the paste to a non-conductive substrate, and

drying the paste to form a stannic oxide gas detecting film.

4,397,889

PROCESS FOR PRODUCING REFRACTORY POWDER

Mary Lou Benjamin, Athens; Robert J. Dobbs, Monroeton, and Mary E. Shaffer, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 5, 1982, Ser. No. 365,685
Int. Cl.³ B05D 7/00
U.S. Cl. 427—221 13 Claims

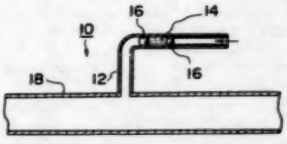
1. A process for producing a refractory powder containing an organic binder comprising heating particles of a refractory material to a temperature above the melting point and below the decomposition temperature of said organic binder to form a heated powder of refractory material, said organic binder consisting essentially of a wax, mixing said organic binder with said heated powder to form a blended mixture, milling said blended mixture with a liquid milling medium to produce a slurry, said organic binder being substantially insoluble in said liquid milling medium, and removing substantially all of said milling medium by evaporation below the decomposition temperature of said organic binder to form a refractory powder having an adherent coating of said organic binder.

4,397,890

METHOD OF LINING PIPES

Namio Kinumoto, Osaka; Takashi Nakao, Katano, and Hiroshi Murase, Sakai, all of Japan, assignors to Osaka Gas Company, Limited, Osaka, Japan

Filed Jan. 29, 1982, Ser. No. 343,982
Int. Cl.³ B05D 7/22, 1/42
U.S. Cl. 427—230 9 Claims



1. A method of lining a piping having branched pipes by causing a body to run through the piping (10) including a large pipe (18) and a small pipe (12) branching therefrom and thereby lining the piping with a fluid seal composition in the form of a tube, the method being characterized by the steps of lining the small pipe (12) by causing a diametrically small running body (16) corresponding thereto to run through the pipe (12), lining the large pipe (18) by causing a diametrically large running body (22) corresponding thereto to run through the pipe (18) and form a lining layer (24), one of the lining steps being performed before the other, returning into the large pipe (18) the portion (20') of the seal composition forced into the small pipe (12) during the large pipe lining step, and consuming the returned portion (20') of the composition for coating the lining layer (24) on the downstream side of the location of the return by causing a running body (22') retaining a slightly smaller diameter than the large running body (22) to run through the large pipe (18) after the returning step.

4,397,891

PROCESS AND APPARATUS FOR INTERNALLY COATING A TUBING

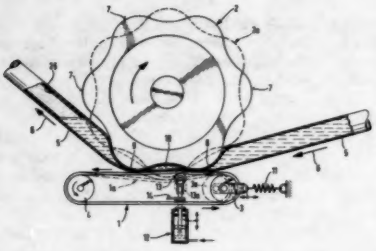
Heinz Kaelberer, Walluf, and Hans Wolf, Ingelheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,562

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113959

Int. Cl.³ B05C 7/04; B05D 7/22

U.S. Cl. 427—238 37 Claims



1. A process for internally coating a tubing comprising the steps of:

introducing a supply of a coating liquid into the tubing;

inflating the tubing above the level of the coating liquid with a support gas;

conveying the tubing vertically upwardly with the tubing carrying a relatively thick layer of coating liquid on its inside surface;

flattening the inflated tubing;

conveying the flattened tubing along a winding course through a metering device comprising a series of at least two wipers positioned in the direction of travel of the tubing on opposite sides of the tubing in such a way that the two outside surfaces of the flattened tubing are alternately drawn tightly against contact surfaces of successive wipers, said wiper surfaces being rounded in the longitudinal direction of the tubing, whereby the major quantity of the coating liquid carried on the inside surface of the flattened tubing is retained and only a thin layer of the coating liquid remains on the inside surface of the tubing exiting from the metering device;

reinflating the tubing upstream of the metering device with support gas; and

conveying the reinflated tubing through a drying station and removing volatile constituents of the coating liquid in said drying station to form a uniform, continuous coating on the inside surface of the tubing;

the contact pressure between the tubing and the contact surfaces of the first and last wipers in said metering device being greater than the pressure of the support gas in the tubing upstream and downstream from the metering device whereby support gas is excluded from the tubing in the metering device.

18. Apparatus for internally coating a tubing comprising:

means for maintaining a supply of coating liquid in said tubing and for maintaining a portion of the tubing above the level of the coating liquid inflated with a support gas;

means for flattening the inflated tubing;

metering means for retaining the major quantity of the coating liquid carried on the flattened tubing and permitting only a thin layer of coating liquid to remain on the inside surface of the flattened tubing, said metering means comprising a series of at least two wipers having contact surfaces which are rounded in the longitudinal direction of the tubing, said wipers being positioned in the direction of travel of the tubing on opposite sides of the tubing in such a way that the two outside surfaces of the tubing alternately contact the contact surfaces of successive wipers and the tubing traverses a winding course through the metering means;

means downstream of said metering means for removing volatile constituents of the coating liquid to form a uniform continuous coating on the inside surface of the tubing; and

means for conveying said tubing upwardly from said supply of coating liquid with a relatively thick layer of coating liquid on the inside surface of the tubing, through said flattening means, said metering means and said drying means and for maintaining the contact pressure between the tubing and the first wiper of said metering means greater than the pressure of the support gas in the tubing above said supply of coating liquid in order to exclude support gas from the tubing in the metering means.

4,397,892

PROCESS FOR THE PRODUCTION OF CHEMICALLY BONDED NON-WOVEN SHEET MATERIALS CONTAINING A BINDER OF MICROHETEROPOROUS STRUCTURE

Ivan Lorant; Gyula Murlasits, both of Budapest; Gyula Wlasitsch, Győr; Ferenc Farkas, Győr, and Geza Szomolanyi, Győr, all of Hungary, assignors to Bör-,Mübor-,es Cipöipari kutato Intezet, Budapest and Graboplast, Győri Pamutszövö-es Mübörgyar, Győr, both of, Hungary

Continuation-in-part of Ser. No. 147,350, May 7, 1980, abandoned. This application Apr. 26, 1982, Ser. No. 372,039

Int. Cl.³ B05D 5/00

U.S. Cl. 427—245 10 Claims

1. A process for the production of a chemically bonded non-woven material containing a binder having a microheteroporous structure comprising the steps of:

(a) impregnating a fiber fleece with a heat sensitized aqueous polymer dispersion containing from 1 to 60% by weight of a hydratable sulfonic compound, which is a water soluble condensation product of a diarylsulfone derivative and an arylsulfonic acid, and a plasticizer composed of a non-ionogenic compound which contains polar groups capable of hydration;

(b) destabilizing the polymer dispersion;

(c) crosslinking the polymer by heating the impregnated fleece at a temperature of less than 150° C.; and

(d) dehydrating the crosslinked polymer in the fleece.

4,397,893

SYSTEM FOR FLAME SPRAY COATING OF A ROD

Clifford C. Bottoms, Rte. 2 Box 184L, McKinney, Tex. 75069

Filed Sep. 8, 1981, Ser. No. 299,724

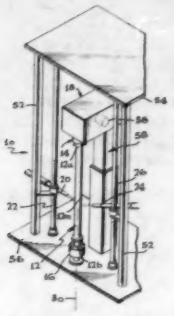
Int. Cl.³ B05D 1/08

U.S. Cl. 427—319 5 Claims

2. A method for coating a long and thin workpiece having a workpiece axis extending along its length, comprising:

rotating said workpiece substantially about said workpiece axis while heating said workpiece to a temperature that

significantly reduces its bending strength and flame spray coating it;



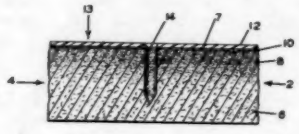
said axis being substantially vertical during said steps of heating and coating.

4,397,894

VINYL FACED WALLBOARD

Charles Haines, Jr., and Raymond C. Kent, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 22, 1982, Ser. No. 360,786
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—138 **6 Claims**



1. A wallboard comprising:

(a) a base sheet composed of two regions, the upper region being of a greater density than the lower region

(b) a vinyl sheet positioned over the surface of the denser region and fastened thereto, and

(c) small perforations extending through the vinyl sheet, the denser upper region of the base sheet and partly into the less dense lower region of the base sheet.

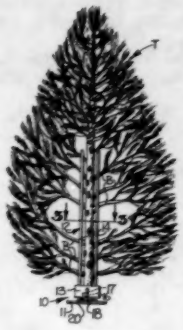
4,397,895

CHRISTMAS TREE DISPLAY STAND

Joseph P. Poe, Rte. 1, Box 243, West Jefferson, N.C. 28694

Filed Aug. 13, 1980, Ser. No. 177,575
Int. Cl.³ A47G *33/06*
U.S. Cl. 428—18 **9 Claims**

1. In combination, a Christmas tree having a trunk and branches extending laterally therefrom, and a rotatable display stand for supporting and displaying said tree, said display stand comprising a base adapted to be positioned on the ground, a rotatable tree support positioned above said base and receiving and supporting said Christmas tree therein, and means mounting said tree support for rotation with respect to said base to thereby enable rotating the tree for examining and inspecting all sides thereof, said rotatable tree support comprising a support platform engaging and supporting the lower end of the tree trunk and at least three upright support members carried by said support platform and extending upwardly therefrom, said support members being mounted in spaced apart relation from one another and substantially surronding the tree trunk and being of a length such as to extend well above the lowermost branches of the tree and into the middle portions of the tree so that the tree branches extend outwardly between said



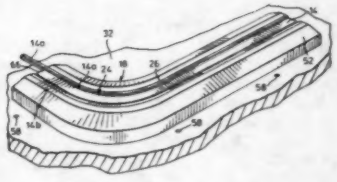
upright support members and serve to assist in holding the tree in a stable upright position.

4,397,896

LATERALLY CURVED DECORATIVE TRIM STRIP ASSEMBLY AND METHOD OF MAKING SAME

Eric Moran, Burlington, Canada, assignor to P.V. Trim Limited, Mississauga, Canada

Division of Ser. No. 233,047, Feb. 10, 1981, Pat. No. 4,364,789.
This application Apr. 7, 1982, Ser. No. 366,227
Int. Cl.³ B60R *13/02, 13/04*
U.S. Cl. 428—31 **7 Claims**



1. A decorative trim strip assembly having a laterally curved portion formed therein, comprising:

a substantially rigid metallic backing plate **12** having a substantially planar face **16**, and having a laterally curved portion **18** formed therein to a desired configuration in a plane parallel to said substantially planar face;

an elongated polymeric resinous material strip element **14** having substantially greater width than thickness, and having a substantially planar first surface **20** bonded to said substantially planar face of said backing plate, the opposite surface **22** to said first surface having a desired decorative appearance and surface contour;

and at least one longitudinal slit **24** formed in said polymeric resinous material strip element from a place situated beyond a first end of said curved portion thereof to the end of said strip element which is beyond said curved portion remote from said first end thereof;

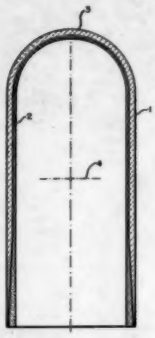
the width of each longitudinal portion of said polymeric resinous material strip element in the region of said at least one longitudinal slit being such that the stress resistance of each respective longitudinal portion is not exceeded for the curvature thereof in said curved portion of said decorative trim strip.

4,397,897

BELL OF TRANSLUCENT FUSED SILICA FOR THE PRECIPITATION OF POLYSILICON

Karl A. Schülke, Neuberg, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,938
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107421
Int. Cl.³ B65D *1/00*
U.S. Cl. 428—35 5 Claims



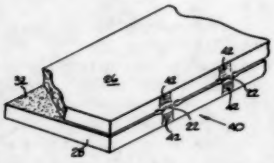
1. In a bell of translucent fused silica having an inner layer of transparent fused silica for the precipitation of polysilicon, the improvement wherein the thickness of the transparent fused silica layer increases continuously by at least half of its thickness in a area where the total wall thickness of the bell remains constant, towards the open end of the bell.

4,397,898

THICK BATT OF FIBROUS INSULATION

Richard J. Ray, Jr., Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Division of Ser. No. 198,411, Oct. 20, 1980, Pat. No. 4,342,610. This application Apr. 5, 1982, Ser. No. 365,227
Int. Cl.³ B32B *12/06*
U.S. Cl. 428—43 1 Claim



1. A thick batt of fibrous material manufactured by the process of

(a) cutting a blanket of fibrous material into a plurality of individual pieces;

(b) intermittently slitting each piece completely through the blanket to form two portions which are interconnected by discrete pillars of fibrous material;

(c) applying an adhesive to at least one of said interconnected fibrous portions;

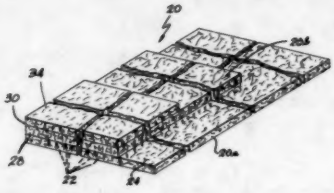
(d) folding one of said interconnected fibrous portions onto the other of said fibrous portions, at least the innermost fibers in the folded pillars being uncut and functioning as a hinge to insure proper alignment of the two portions, each of said plurality of pillars being sufficiently narrow as to enable the outermost fibers in the folded pillars to tear so as not to crimp the thusly formed thick batt.

4,397,899

VARIABLE THICKNESS MAT FOR USE AT THE STRESS TRANSITION ZONE JUNCTURE OF A BRIDGE-ROADWAY OR THE JUNCTURE OF A RAILROAD CROSSING-ROADWAY

Ronald P. Marsh, St. Louis, Mo., and Robert W. Luebke, Ponte Vedra, Fla., assignors to True Temper Corporation, Cleveland, Ohio

Filed Oct. 3, 1980, Ser. No. 193,886
Int. Cl.³ B32B *5/00, 5/26*
U.S. Cl. 428—77 15 Claims



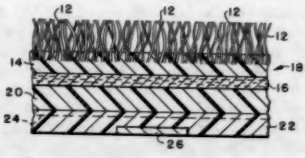
1. An elongated, variable thickness, non-woven, integral fiber mat pervious to liquid and which is adapted for use at a stress transition zone juncture, such as for instance at the juncture between a bridge and an adjacent roadway, or at a roadway-railroad grade crossing or the like, said mat being adapted for disposal beneath the roadway proper lengthwise thereof commencing at said juncture for spreading the forces applied to the roadway by traffic moving thereon, over an increased area, said mat being of variable thickness in directions both lengthwise and transverse of said mat, the thickest portion of said mat being located at the forward end thereof, said forward end having a frontal surface which is disposed in a generally vertical plane, and which is adapted for disposal at said juncture, said mat decreasing in thickness lengthwise of said mat in a direction rearwardly from said frontal surface, and decreasing in thickness in a direction transverse of said mat, said transverse decrease in thickness providing a lateral shoulder portion for said mat extending for the full length of the latter and being of generally uniform thickness throughout said length.

4,397,900

MAGNETIC CARPET TILE

Kenneth B. Higgins, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 21, 1981, Ser. No. 332,858
Int. Cl.³ B32B *3/02*
U.S. Cl. 428—95 4 Claims



2. The method of claim 1 wherein the strip of magnetic material is heated prior to being embedded into the polyvinyl chloride material.

4,397,901

COMPOSITE ARTICLE AND METHOD OF MAKING SAME

James W. Warren, 24300 Aetna St., Woodland Hills, Calif. 91367

Division of Ser. No. 62,401, Jul. 31, 1979, Pat. No. 4,275,095. This application Jun. 15, 1981, Ser. No. 273,958

Int. Cl.³ C23C 11/08

U.S. Cl. 428—101 13 Claims

1. A carbon-silicon composite anisotropic article comprising a multiplicity of carbon fibers forming a shaped article, a coating of pyrolytic carbon extending over each of said fibers, a reaction formed diffusion coating of silicon extending substantially over each of said pyrolytic carbon coated fibers and substantially over the outer periphery of the article, said pyrolytic carbon coating and said silicon coating having been applied to said fibers in a manner whereby said fibers are free to move relative to said coatings, said carbon fibers and said silicon coating having a different coefficient of thermal expansion.

4,397,902

CONSTRUCTION-ELEMENT

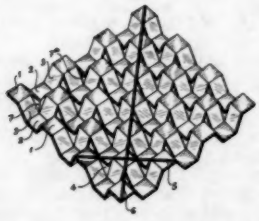
Ronald D. Resch, 43 Commercial Wharf, Apt. 5, Boston, Mass., assignor to Ronald D. Resch, Boston, Mass.

Filed Mar. 21, 1979, Ser. No. 973,707

Claims priority, application Netherlands, Dec. 27, 1977, 7714437

Int. Cl.³ B32B 3/00, 3/30

U.S. Cl. 428—119 7 Claims



1. A construction element comprising a plate like material folded to a regular repetitive pattern to form a plurality of regularly spaced depressions defined by rectangular tops located in a first plane and rectangular troughs located in a second plane said tops and troughs surrounding one another and being interconnected by four inclined flat surfaces, each said inclined flat surface being connected at opposite parallel ends to an edge of a respective top and an edge of a respective trough and having opposite side edges which are unconnected such that the unconnected side edges of said inclined flat surfaces define voids located between said tops and troughs which define rectangular openings in said construction element in a direction normal to said first and second planes.

4,397,903

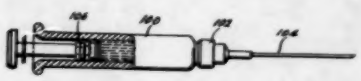
MOLDED ARTICLES

Roland M. Allen, Kenilworth, and Andrew J. Kolacsi, Pottstown, both of Pa., assignors to The West Company, Phoenixville, Pa.

Continuation of Ser. No. 4,374, Jan. 18, 1979, abandoned, which is a continuation of Ser. No. 743,006, Nov. 18, 1976, abandoned, which is a continuation of Ser. No. 473,216, May 24, 1974, abandoned. This application May 1, 1981, Ser. No. 259,743

Int. Cl.³ B32B 3/00

U.S. Cl. 428—156 1 Claim



1. A plunger for a syringe assembly comprising a generally cylindrical body portion made of an elastomeric material, at least one radially outwardly directed rib adjacent one axial end thereof, said rib being of arcuate cross section, a clad element at said one axial end consisting of a layer of elastomeric material about 0.030 to 0.110 inches thick and a layer of polytetrafluoroethylene between 0.002 and 0.003 inches thick bonded thereto, said layer of polytetrafluoroethylene overlying said one axial end and including a circumferentially extending return skirt overlying a portion of said rib, the terminal edge of said skirt terminating approximately at a circumferential line tangent to said rib at its maximum cross section and in a plane transverse to the central axis of said body portion.

4,397,904

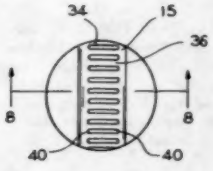
HINGE FOR THERMOPLASTIC MATERIAL

Loren J. Hulber, Naperville, and Raymond W. Fluckiger, Chicago, both of Ill., assignors to Jostens, Inc., Minneapolis, Minn.

Filed Apr. 13, 1981, Ser. No. 253,245

Int. Cl.³ B32B 3/02

U.S. Cl. 428—167 2 Claims



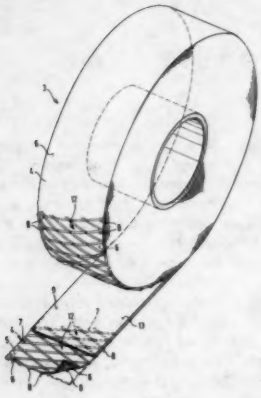
1. In combination with a loose-leaf binder cover of the type wherein a plurality of flat rigid inserts are sandwiched between a sealed pair of thermoplastic sheets including a first upper and a second lower sheet, wherein a hinge is to be formed in the thermoplastic sheets between the flat inserts, the improvement comprising: a plurality of alternating indentations and regions raised relative thereto in the first upper sheet extending longitudinally from the top to the bottom of the first sheet and between said inserts to form a hinge, the longest dimension of said indentations extending transversely to a longitudinally oriented hinge, said raised regions being wider in the longitudinal direction than said indentations and coplanar with said first upper sheet across the hinge, wherein said hinge resists longitudinal tearing by maintaining the full thickness of the thermoplastic sheets for virtually the entire length of the hinge.

4,397,905

ADHESIVE TAPE

Gerhard Dettmer, Taunusstein, and Peter Hammerschmidt, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 204,863
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 7931547[U]
Int. Cl.³ B32B *3/28*; A61F *13/02*; C09U *7/02*
U.S. Cl. 428—180 12 Claims



1. An adhesive tape, comprising:

a stretch-oriented and embossed support film of synthetic thermoplastic polymer having first and second sides and a thickness of less than about 35 μm and having on its first side a plurality of elevations formed by embossing the film and having a height within the range of from about 5 to 20 μm, and on its second side a plurality of depressions equal and opposite to said elevations; and

a layer of pressure-sensitive adhesive on the second side of said support film.

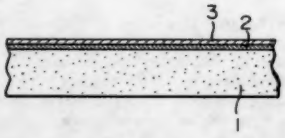
8. An adhesive tape according to claim 1, wherein said elevations form a diamond pattern.

4,397,906

MULTILAYER STRUCTURAL BUILDING MATERIAL

Yoshihiro Nakagawa, Kusatsu, and Hachirou Yuura, Shiga, both of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 29, 1981, Ser. No. 258,557
Claims priority, application Japan, Apr. 30, 1980, 55-58418
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—195 8 Claims



1. A multilayer structural building material which is especially suitable as a backing material with one side bonded to walls, ceilings or floors and the other side bonded to a surface material of wall paper or a non woven fabric, said multilayer structural material comprising a polyolefin or polybutadiene foam sheet as a base layer, a dry coated layer of a polychloroprene-type adhesive as an interlayer, and a dry coated layer of a mixture of a water-base adhesive and an inorganic filler as a surface layer.

6. The material of claims 1 or 2 wherein the mixture of a water-base adhesive and an inorganic filler is coated in dots or lines.

4,397,907

MULTI-PURPOSE AIR PERMEABLE COMPOSITES

Robin W. Rosser, Santa Monica, and Leon B. Keller, Palos Verdes Estates, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jun. 22, 1981, Ser. No. 276,098
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—240 27 Claims

1. A tailorable air permeable composite, suitable for use in the fabrication of protective clothing, filters and other structural membranes comprising selected solid particles interstitially located within a web-like network of interconnected, branched organic fibers wherein said fibers are formed from solution in the presence of said particles and coil about and entrap said particles in situ during the formation of said fibers, without coating said particles, thereby forming a stable solid-in-solid suspension that is structurally strong, porous and light in weight.

24. A composite as set forth in claim 1 which additionally includes an open weave cloth substrate wherein said fibers entrapping said particles are formed in the presence of said substrate and deposit on said substrate and in the open spaces thereof.

4,397,908

ELECTRICALLY NEUTRAL NONPERMSELECTIVE POROUS MEMBRANE

Edward L. Phillips, Medford Lakes, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 99,338, Dec. 3, 1979, abandoned. This application Sep. 4, 1981, Ser. No. 299,574
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—243 7 Claims

1. An electrically neutral nonpermselective porous membrane suitable for use in an electrodeposition system which exhibits a comparative acid removal number of from about 250 to 400 milli equivalents which comprises a woven fabric substrate having coated thereon a mixture of a binder material and a non-ion exchangeable inert porous filler material in a filler to binder weight ratio of 0.8:1 to 5:1, wherein the binder comprises at least one material selected from the group consisting of polyvinylchloride, polyvinylidene chloride, polyvinylidene fluoride, polyvinyl acetate, cellulose acetate, polyacrylonitrile, acrylic polymers and stryene polymers; and the filler comprises at least one material selected from the group consisting of macroporous crosslinked styrene based polymers, gel type crosslinked styrene based polymers, wood, starch, sugar, flour, natural gum, gelatin, and cellulose, with the porosity of said filler material forming a plurality of random paths which pass through the thickness of the membrane, with said membrane being capable of transmitting negatively and positively

charged ions between the electrodes in an electrodeposition painting operation and at the same time capable of preventing backflow of the electrolytes between the electrode chambers.

4,397,909

PRODUCTION OF SHEET MATERIAL

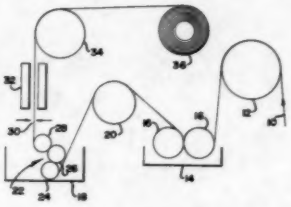
Vaughan P. Goddard, Rondebosch, and Richard B. C. Le Maitre, Somerset West, both of South Africa, assignors to AECI Limited, Johannesburg, South Africa

Filed Jun. 1, 1981, Ser. No. 269,127

Claims priority, application South Africa, Jun. 11, 1980, 80/3481

Int. Cl.³ B32B 27/12, 31/12

U.S. Cl. 428—252 11 Claims



1. A method of producing sheet material, which method comprises first heating a web of woven fabric, and then impregnating the hot fabric with polyvinylchloride paste thereafter applied to the fabric, thereby to provide a material in which the fabric is coated with polyvinylchloride on each side thereof, the temperature of the hot fabric being at least 50° C. but sufficiently low to permit impregnation of the fabric by the polyvinylchloride paste before any appreciable gelling of the polyvinylchloride paste has taken place, and passing the impregnated fabric through the nip of a pair of opposed pinch rollers whereby pressure is applied to the fabric and surplus polyvinylchloride is squeezed therefrom.

11. Sheet material when made according to the method claimed in claim 1.

4,397,910

LIGHT WEIGHT HIGH TEMPERATURE POLYESTER LAMINATES USEFUL AS LUBRICATING RUB STRIPS

Melvin E. Benson, Varnville, and Harold O. McCaskey, Allendale, both of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 2, 1982, Ser. No. 384,352

Int. Cl.³ B32B 27/02, 27/12; F16C 33/18, 33/20

U.S. Cl. 428—283 10 Claims

1. A high temperature lubricating laminate rub strip comprising a plurality of heat and pressure consolidated resin impregnated mats, each resin impregnated mat comprising a porous, non-woven, interlocked, polyethylene terephthalate filament mass, impregnated with a thermoset resin to a treated ratio of from about 2 to about 5.

4,397,911

CLEANING TAPE

Goro Akashi, and Masaaki Fujiyama, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 24, 1981, Ser. No. 276,746

Claims priority, application Japan, Jun. 24, 1980, 55-85496

Int. Cl.³ B32B 5/16; G11B 5/78

U.S. Cl. 428—323 10 Claims

1. A cleaning tape, comprising:

a base; and

a cleaning layer on said base, said cleaning layer comprised of (1) a binder, (2) an organic polymer powder having a particle size of at least 3 microns, and (3) an inorganic solid powder having a particle size of no more than 3 microns, wherein the weight ratio of the organic polymer powder to the inorganic solid powder is from 1:10 to 10:1, wherein said base has a thickness of up to 25 microns, wherein said cleaning tape is an audio or video tape recorder cleaning tape.

4,397,912

GARNET FILM FOR MAGNETIC BUBBLE ELEMENT

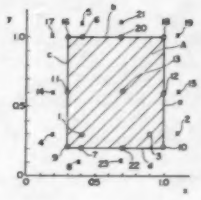
Norio Ohta, Sayama; Keikichi Ando, Musashino; Yuzuru Hosoe, Kokubunji, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,700

Claims priority, application Japan, Jun. 27, 1980, 55-86625

Int. Cl.³ G11B 5/64; B01N 17/00

U.S. Cl. 428—336 3 Claims



1. A garnet film on a substrate, for a magnetic bubble element, said garnet film having such a composition as is expressed by a general formula of $(LaLu)_{3-x-y}Sm_xGd_yFe_{5-z}Ga_zO_{12}$, wherein: $0.3 \leqq x \leqq 1.0$; $0.2 \leqq y \leqq 1.0$; and $0.0 \leqq z \leqq 0.8$, said substrate being a single-crystalline substrate of $Gd_3Ga_5O_{12}$, and said garnet film being epitaxially grown on the (111) surface of the single-crystalline substrate of $Gd_3Ga_5O_{12}$.

4,397,913

STARCH-CONTAINING TREATING COMPOSITION FOR GLASS FIBERS AND TREATED GLASS FIBERS AND STRANDS

Dennis M. Fahey, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 13, 1980, Ser. No. 206,420

Int. Cl.³ C03C 25/02; C08L 3/02; D02G 3/18

U.S. Cl. 428—369 27 Claims

1. An aqueous bulking sizing composition for treating glass fibers during their formation to protect the fibers against interfilament abrasion when fibers are gathered into strands, to allow for facile removal of the strand or strands from supply packages to a bulking operation and to allow the fibers within the strand to become separated to a degree, when the strand or strands are subjected to the separating force of the bulking operation, comprising:

a. starch having Brabender values equivalent to gel temperature in the range of about 65° C. to about 90° C. and maximum viscosity in the range of about 500 B.U. to about 1200 B.U. at a 9.5 dry solids percent concentration in an amount in the range of about 30 to about 60 weight percent of the nonaqueous components of the composition;

b. hydrogenated nonionic lubricant in the amount in the range of about 15 to about 36 weight percent of the nonaqueous components;

c. one or more waxes in an amount of about 3 to about 6 weight percent of the nonaqueous components,

d. one or more nonionic emulsifiers giving a total HLB in the range of about 8 to about 12 for emulsification of the nonionic lubricant;

e. a starch plasticizer in the amount of about 3 to about 6 weight percent of the nonaqueous components;

f. a cationic lubricant in the amount of about 7 to about 14 weight percent of the nonaqueous components;
g. one or more ester modified amino silane coupling agents in an amount of about 7 to about 15 weight percent of the nonaqueous components, and
h. an amount of water sufficient to yield a total solids for the composition in the range of about 1.5 to about 4 weight percent of the aqueous composition.

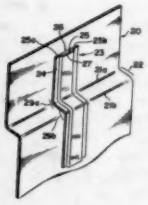
19. Bulked glass fiber strand yarn produced from one or more glass fiber strands having a dried residue of an aqueous treating composition, comprising:
a. starch having Brabender values equivalent to gel temperature in the range of about 65° C. to about 90° C. and maximum viscosity in the range of about 500 B.U. to about 1200 B.U. at a 9.5 dry solids percent concentration in an amount in the range of about 30 to about 60 weight percent of the nonaqueous components of the composition;
b. hydrogenated nonionic lubricant in the amount in the range of about 15 to about 36 weight percent of the nonaqueous components;
c. one or more waxes in an amount of about 3 to about 6 weight percent of the nonaqueous components;
d. one or more nonionic emulsifiers giving a total HLB in the range of about 8 to about 12 for emulsification of the nonionic lubricant;
e. a starch plasticizer in the amout of about 3 to about 6 weight percent of the nonaqueous components;
f. a cationic lubricant in the amount of about 7 to about 14 weight percent of the nonaqueous components;
g. one or more ester modified amino silane coupling agents in an amount of about 7 to about 15 weight percent of the nonaqueous components, and
h. an amount of water sufficient to yield a total solids for the composition in the range of about 1.5 to about 4 weight percent of the aqueous composition.

4,397,914

REINFORCING MATERIAL FOR A PANEL

Toshikatu Miura; Yukio Nagata, and Yukio Okada, all of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 9, 1982, Ser. No. 356,454
Claims priority, application Japan, Mar. 16, 1981, 56-36566
Int. Cl.³ B32B *5/20, 3/10, 3/08*
U.S. Cl. 428—43 **4 Claims**



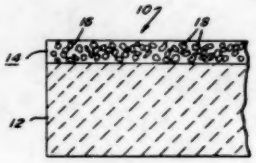
1. In an automobile structure, a panel having a portion bent into a step shape, a reinforcing material fixed to the panel substantially perpendicular to the bent portion of the panel, the reinforcing material comprising:
a resin material which was hardened by heating;
a material which expanded irreversibly in response to heating;
the expanded material being centered onto the resin material in such a manner that the edges of the resin material are exposed and can adhere to the panel;
the expanded material including an easy-bending portion having plural perforations or a groove in a position corresponding to the bent portion of the panel.

4,397,915

ELECTRICAL RESISTOR MATERIAL, RESISTOR MADE THEREFROM AND METHOD OF MAKING THE SAME

Richard L. Wahlers, Churchville, and Kenneth M. Merz, Gladwyne, both of Pa., assignors to TRW, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 613,433, Sep. 15, 1975, Pat. No. 4,322,477. This application Sep. 3, 1981, Ser. No. 298,998
Int. Cl.³ B32B *17/06;* **H01B** *1/06*
U.S. Cl. 428—432 **42 Claims**



1. A vitreous enamel resistor material adapted to be applied to and fired on a substrate to form an electrical resistor with a controlled temperature coefficient of resistance within ±2000 ppm/°C. consisting essentially of a mixture of tin oxide particles and a glass frit, said glass frit having a softening point below the melting point of the tin oxide particles, said mixture being fired in a inert atmosphere to a temperature between approximately 850° C. and 1150° C., the glass frit being present in the amount of 30% to 80% by volume of the mixture.

9. An electrical resistor characterized by providing a relatively low temperature coefficient of resistance within ±2000 ppm/°C. comprising a ceramic substrate and a layer of a resistor material on a surface of said substrate, said resistor material consisting essentially of tin oxide particles dispersed throughout a glass, the tin oxide being present in the amount of 20% to 70% by volume.

15. A method of making electrical resistors providing selected resistivities within a wide range and with controlled temperature coefficients of resistance within ±2000 ppm/°C. comprising the steps of
mixing together in selected amounts a glass frit and conductive particles consisting essentially of tin oxide, the glass frit being present in the amount of 30% to 80% by volume,
applying said mixture to a surface of a substrate,
firing said coated substrate in an inert atmosphere to a selected temperature between approximately 850° C. and 1150° C. at which the glass softens but below the point at which the tin oxide melts, and
cooling the coated substrate to form a layer of glass bonded to the substrate and having conductive particles of tin oxide embedded in and dispersed throughout the glass.

26. An electrical resistor of the vitreous enamel type providing a temperature coefficient of resistance within ±2000 ppm/°C. made by
mixing together in selected amounts a glass frit and conductive particles consisting essentially of tin oxide, the glass frit being present in the amount of 30% to 80% by volume,
applying said mixture to a surface of a substrate,
firing said coated substrate in an inert atmosphere to a temperature between approximately 850° C. and 1150° C. at which the glass softens and below the point at which the tin oxide melts, and
cooling the coated substrate to form a layer of glass bonded

to the substrate and having conductive particles of tin oxide embedded in and dispersed throughout the glass.

37. An electrical resistor characterized by providing a relatively low temperature coefficient of resistance and a resistivity between approximately 2.75 K and 7.16 meg ohms/square comprising a ceramic substrate and a layer of resistor material on a surface of said substrate, said resistor material consisting essentially of tin oxide particles dispersed throughout a glass, the glass being present in the amount of 30% to 80% by volume.

4,397,916
LAMINATED MULTILAYER STRUCTURE

Riichiro Nagano, Waki, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,610

Claims priority, application Japan, Feb. 29, 1980, 55-24078; Feb. 29, 1980, 55-24079; Dec. 23, 1980, 55-181331

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—461 **7 Claims**

1. In a laminated multilayer structure composed of (A) a layer of a graft-modified ethylene resin grafted with an unsaturated carboxylic acid or a functional derivative thereof and (B) an oxygen- or nitrogen-containing polar resin layer or a metal layer in contact with the layer (A); the improvement wherein (1) the layer (A) consists of

(i) 1 to 100% by weight of said graft-modified ethylene resin derived from an ethylene polymer which contains 0 to 15 mole% of at least one alpha-olefin having 3 to 30 carbon atoms as a comonomer and has an $MI_2/[\eta]^{-8.77}$ ratio in absolute value of not less than 15 and a density of 0.88 to 0.98 g/cm^3, and

(ii) 99 to 0% by weight of an unmodified ethylene polymer containing 0 to 50 mole% of at least one alpha-olefin having 3 to 30 carbon atoms as a comonomer and having an $MI_2/[\eta]^{-8.77}$ ratio in absolute value of not less than 15 and a density of 0.86 to 0.96 g/cm^3, and

(2) the layer (A) has

(a) an ethylene content of not less than 80 mole%,

(b) a content of the carboxylic acid or the derivative thereof of 0.01 to 10% by weight based on the weight of the layer (A),

(c) a density of 0.88 to 0.98 g/cm^3, and

(d) an MI_{10}/MI_2 ratio of from 5 to 18.

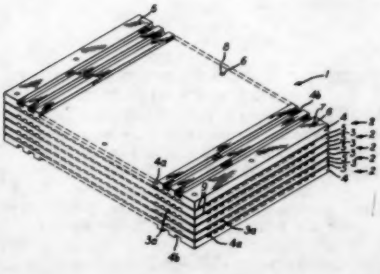
4,397,917
FUEL CELL PACK WITH INTERNAL CONNECTION OF FUEL CELLS

Chang V. Chi, Brookfield, and Andrei Leonida, Danbury, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed Jan. 11, 1982, Ser. No. 338,353

Int. Cl.³ H01M *8/24*

U.S. Cl. 429—26 **26 Claims**



1. A fuel cell pack comprising:

a plurality of fuel cells arranged in adjacent relationship;

a first cooling means following said cells and forming a first end of said pack;

and means internal of said pack for holding said cells and said cooling means together.

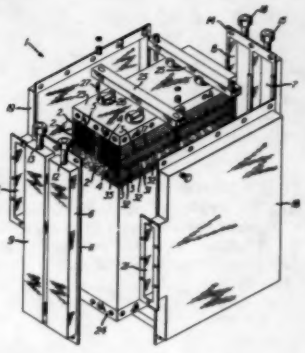
4,397,918
FUEL CELL STACK SHORTING METHOD AND APPARATUS

Chang V. Chi, Brookfield, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Apr. 8, 1982, Ser. No. 366,659

Int. Cl.³ H01M *8/04*

U.S. Cl. 429—26 **24 Claims**



1. A fuel cell stack comprising:

a plurality of cooling assemblies;

a number of fuel cells situated between successive of said cooling assemblies;

and conductive means connecting first and second of said cooling assemblies establishing a short circuit path which electrically bypasses the fuel cells situated between said first and second cooling assemblies.

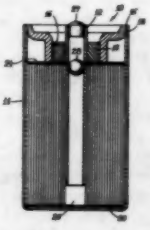
4,397,919
EXPLOSION RESISTANT BATTERY CELLS

Geoffrey E. H. Ballard, El Paso, Tex., assignor to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 22,696, Mar. 22, 1979, abandoned. This application May 19, 1981, Ser. No. 265,342

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—53 **14 Claims**



1. In an explosion resistant sealed battery cell having an electrolyte and an anode-cathode structure, the improvement comprising:

a casing formed in a non-cylindrical configuration to render it distortable in shape by internal pressure to increase its

volume, said non-cylindrical casing being made of a flexible material and having such dimensions and configuration to enable such volume expanding distortion without the creation of any breaks in the casing which would vent the interior thereof to atmosphere; and

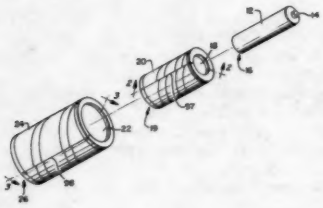
thermally responsive means associated with said cell for hermetically sealing the cell before and during volume expansion, said thermally responsive means being operable to melt at some pre-determined temperature associated with an internal pressure in excess of that causing volume expansion, melting of said thermally responsive means venting the casing to release excessive pressure from within said casing after the pressure induced volume expansion has taken place.

4,397,920

ADAPTER PERMITTING SMALLER SIZE BATTERY CELL TO FUNCTION IN LARGER SIZE APPLICATIONS

Burton C. Trattner, 416 Clubhouse Ct., Coram, N.Y. 11727

Filed Aug. 31, 1981, Ser. No. 297,891
Int. Cl.³ H01M *2/10*
U.S. Cl. 429—100 **10 Claims**



1. An adapter for permitting a first standard size battery to be used in place of a second, larger standard size battery, comprising:

a tubular means of a diameter and length substantially equal to the diameter and length of the second, larger standard size battery;

an opening in one end of said tubular means of a diameter larger than the diameter of the first standard size battery;

support means arranged inside said tubular means for defining an imaginary cylinder smaller in diameter than the cylinder presented by the first standard size battery;

stop means arranged inside said tubular means at a distance from said one end equal to the length of the first standard size battery, said stop means having a slot formed therein of a size less than the size of the end of the first size battery;

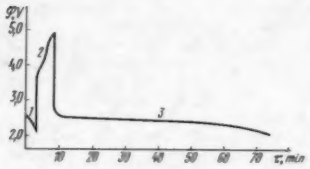
disc-shaped, metallic electrical contact means arranged in the second end of said tubular means for presenting an electrical contact surface substantially coplanar with said second end of said tubular means and having a resilient contact means comprising a centrally arranged upraised curved strip formed from said disc for protruding through said slot in said stop means for making electrical contact with an end of the first size battery, whereby upon inserting the first size battery into said opening for a distance to abut said stop means, the combination can be used in place of the second larger size battery.

4,397,921

ELECTROCHEMICAL CELL CONTAINING SULPHUR DIOXIDE AS CATHODIC DEPOLARIZER

Oktavian S. Xenzhek; Elena M. Shembel; Valentina I. Litvinova; Tamara L. Martynenko, all of Dnepropetrovsk; Leonid B. Raikhelson; Leonid A. Sokolov, both of Leningrad, and Valentin Z. Moskovsky, Dnepropetrovsk, all of U.S.S.R., assignors to Dnepropetrovsky Khimiko-Tekhnologichesky Institut Imeni F.E. Dzerzhinskogo, Dnepropetrovsk, U.S.S.R.

Filed Aug. 13, 1981, Ser. No. 292,486
Int. Cl.³ H01M *4/36, 6/14, 4/48*
U.S. Cl. 429—105 **7 Claims**



1. An electrochemical cell comprising an anode of a metal capable of reducing sulphur dioxide, an inert porous cathode with electron-type conductivity, preliminarily anodically polarized to a potential of from 4.5 to 4.7 V relative to a lithium reference electrode, and a non-aqueous electrolyte containing sulphur dioxide as a cathodic depolarizer, at least one aprotic organic solvent having a donor number of from 20 to 50, and an electrolyte salt inert to sulphur dioxide and said anode metal.

4,397,922

CHEMICAL POWER SUPPLY

Vitaly D. Pokhodenko, ulitsa Anri Barbjusa, 22/26, kv. 26; Vyacheslav G. Koshechko, prospekt Vossoedinenia, 13a, kv. 137; Vladimir I. Barchuk, ulitsa Piterskaya 4, kv. 8, and Kim S. Isagulov, bulvar Lesi Ukrainki, 5, kv. 142, all of Kiev, U.S.S.R.

Filed Sep. 25, 1981, Ser. No. 305,810
Int. Cl.³ H01M *10/40*
U.S. Cl. 429—105 **6 Claims**

1. A chemical power supply comprising a cathode and an anode including active materials dissolved in an electrolyte based on an organic solvent, and a diaphragm for separating said cathode from said anode, the active material of said cathode being a stable radical selected from the group consisting of a stable cation-radical of an aromatic amine, a stable cation-radical of a heterocyclic amine, a stable electrically neutral radical of an aromatic oxygen-containing compound, a stable electrically neutral radical of an aromatic nitrogen-containing compound, while the anode active material is a stable anion-radical of an aromatic compound.

4,397,923

METHOD OF MANUFACTURING AN OPTICAL RECORDING ELEMENT

Nobuaki Yasuda, Zushi; Yoshinori Fujimori, Kawasaki, and Masaaki Morita, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 171,288, Jul. 23, 1980, Pat. No. 4,343,862.
This application Jun. 16, 1981, Ser. No. 274,196
Claims priority, application Japan, Aug. 1, 1979, 54-97196
Int. Cl.³ B05D *5/06*; B32B *27/06*; G01D *15/34*
U.S. Cl. 427—162 **4 Claims**

1. A method of manufacturing an optical recording element, which comprises the steps of:

preparing a heat-resistant organic resin substrate sheet;

taking said substrate sheet into a vacuum chamber;

forming a recording layer on said substrate sheet by sputtering in said vacuum chamber;
preparing a transparent organic resin protective sheet having a softening point less than or equal to the softening point of said heat-resistant organic resin substrate sheet;
taking said protective sheet into said vacuum chamber;
thermally pressing said protective sheet against said recording layer in said vacuum chamber to form a thermally laminated sheet mass;
taking said thermally laminated sheet mass out of said vacuum chamber; and
cutting said thermally laminated sheet mass into a prescribed form.

4,397,924

HIGH TEMPERATURE SOLID STATE STORAGE CELL

Jesse R. Rea, Burlington; Milton Kallianidis, Brockton, both of Mass., and G. Stephen Kelsey, Nashua, N.H., assignors to Duracell Inc., Bethel, Conn.

Filed Jun. 15, 1981, Ser. No. 273,797
Int. Cl.³ H01M 6/18
U.S. Cl. 429—191 **12 Claims**

1. A rechargeable solid state cell, operating at temperatures above about 300° C., comprising a solid rechargeable cathode, a solid alkali metal alloy anode, and a solid electrolyte comprised of an ionically conductive material comprised of said alkali metal characterized in that said anode contains 5–50% by weight thereof of said solid electrolyte material homogeneously dispersed therein and wherein all of said cathode, electrolyte and anode remain in the solid state during cell operation.

11. A method of making a solid state cell with improved recharging characteristics, said cell comprising a solid lithium anode, and solid lithium salt electrolyte and a solid cathode capable of being recharged, with said cell being operated at temperatures above about 300° C. and wherein all of said anode, cathode and electrolyte remain in the solid state during cell operation, said method comprising the steps of forming a lithium alloy, then homogeneously dispersing the same material as in said electrolyte into said lithium alloy in a range of 5–50% by weight thereof and forming said anode, with said anode, electrolyte and cathode being compressed together to form said cell.

4,397,925

ALKALINE BATTERY WITH REDUCING AGENTS IN THE ELECTROLYTE

El-Sayed A. Magahed, Madison, Wis., assignor to Ray-O-Vac Corporation, Madison, Wis.

Filed Oct. 15, 1981, Ser. No. 311,537
Int. Cl.³ H01M 6/04
U.S. Cl. 429—207 **15 Claims**

1. An electrochemical cell having a stable, desirable, open circuit voltage comprising an active metal anode, an aqueous alkaline electrolyte, a suitable separator and a cathode containing at least one reducible oxidic specie dischargeable over the useful life of said cathode against said active metal anode at both an undesirable high voltage and a desirable lower voltage, said cell being characterized by having an effective amount of an electrolyte-soluble reducing agent selected from the group consisting of alkali metal borohydrides, quaternary ammonium borohydrides, complex aluminum hydrides and hydrazine present in said cell and available to said electrolyte at the time of cell closure.

4,397,926

PREPARATION OF CHEESE ANALOGS FROM COMBINATIONS OF ACID CASEIN AND RENNET CASEIN

Mostafa K. Galal, Liverpool, N.Y.; William C. Haines, Rochester, Mich., and Beverly I. Roberto, Syracuse, N.Y., assignors to Borden, Inc., Columbus, Ohio

Filed Dec. 3, 1981, Ser. No. 327,230
Int. Cl.³ A23C 20/00
U.S. Cl. 426—582 **13 Claims**

1. A process for making a cheese analog product comprising
mixing rennet casein with a melting salt solution at an elevated temperature of from about 110° F. (43° C.) to about 150° F. (66° C.) until the rennet casein has dissolved to form a paste,
blending acid casein with said paste until the acid casein is completely dispersed,
adding an edible oil and other conventional ingredients of a cheese analog to said blend and mixing at an elevated temperature of from 160° F. (71° C.) to 190° F. (88° C.) until a homogeneous, smooth plastic mass is obtained, and then
cooling the mass to form the cheese analog product.

4,397,927

IMITATION MILK COMPOSITIONS AND AQUEOUS DISPERSIONS PREPARED THEREFROM

Roy A. Brog, 1600 N. Main St., Logan, Utah 84321

Filed Mar. 25, 1982, Ser. No. 361,761
The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.
Int. Cl.³ A23C 11/04
U.S. Cl. 426—583 **20 Claims**

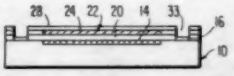
1. An imitation milk composition having a solids content consisting essentially of 40 to 60 percent by weight sweet whey solids, 4 to 10 percent by weight of a water-soluble casein salt, 10 to 40 percent by weight of an added sugar, 0.5 to 35 percent by weight of an edible animal fat or a mixture of edible animal and vegetable fats, and 0 to 35 percent by weight of non-fat dry milk solids, wherein the weight ratio of water-soluble casein salt to the protein in the whey may vary from about 0.8:1 to 1.2:1 and wherein the weight ratio of sugar to the lactose in the whey may vary from about 0.3:1 to 1:1.

4,397,928

PROCESS OF PRODUCING COLOR SOLID IMAGE PICKUP ELEMENT BASE PLATES

Masamichi Sato; Eiichi Hasegawa, and Koji Shimanuki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 16, 1982, Ser. No. 399,080
Claims priority, application Japan, Jul. 16, 1981, 56-111368
Int. Cl.³ G03F 5/00
U.S. Cl. 430—7 **4 Claims**



1. A process of producing a color solid image pickup element base plate comprising the steps of;
coating a solvent permeation preventing layer formed on the surface of a solid image pickup element base plate with a silver halide emulsion layer,
forming a micro color filter composed of at least two-color color separation filter elements by repeatedly applying an image exposure and a color development to the silver halide emulsion layer for each color,
forming a protective layer on the whole surface of the solid image pickup element base plate having the micro color filter thus formed thereon, and

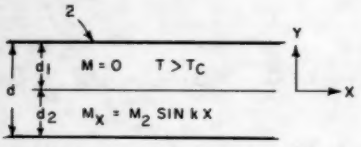
removing the protective layer, the silver halide emulsion layer, and the solvent permeation preventing layer in this order at least the portions corresponding to bonding pat portions of the solid image pickup element base plate having the protective layer thus formed to reveal the bonding pat portions.

4,397,929

PROCESS FOR GENERATING A LATENT MAGNETIC IMAGE

William Bindloss, and Fredrick C. Zumsteg, Jr., both of Wilmington, Del., assignors to E. I. Du Pont De Nemours & Co., Wilmington, Del.

Filed Jun. 18, 1981, Ser. No. 274,756
Int. Cl.³ G03G *19/00*
U.S. Cl. 430—39 **4 Claims**



1. In a process for generating a latent magnetic image on a thermomagnetic layer having imposed thereon an alternating magnetic pattern comprising (1) imagewise exposing the layer to heating radiation by which exposed areas of the layer are heated above its Curie temperature and demagnetized, and (2) cooling the layer to ambient temperature, the improvement comprising:

(a) selecting the frequency of the alternating magnetic pattern and

(b) adjusting the intensity and duration of the heating radiation on the basis of the selected frequency of the alternating pattern and the thickness of the magnetic layer, so that the Curie temperature of the layer is exceeded and the layer is demagnetized through less than the complete thickness of the layer to a depth so that the residual magnetic field from the magnetic layer underlying the demagnetized areas of the layer is sufficiently high to induce in the magnetized area of the layer upon cooling a magnetization of opposite polarity producing a magnetic field of sufficient magnitude that the net strength of the residual field and the field due to the induced magnetization on the exposed areas of the layer on the layer's surface is less than 50% of the magnetic field strength of the unexposed areas of the layer.

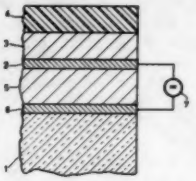
4,397,930

RECORD CARRIER FOR DEFORMATION IMAGES

Ulrich Killat, Hamburg; Gert Rabe, and Hans J. Schmitt, both of Pinneberg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 941,178, Sep. 11, 1978, abandoned. This application Oct. 17, 1980, Ser. No. 198,096
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740835
Int. Cl.³ G03G *5/028*
U.S. Cl. 430—50 **7 Claims**

1. A record carrier for storing information comprising a substrate, a first electrode disposed on said substrate, a second, transparent electrode spaced from said first electrode, a photoconductive layer disposed between said first and second electrodes, said photoconductive layer being the only layer provided between said electrodes, and a thermoplastic layer disposed on the side of said second electrode remote from said photoconductive layer so that when said electrodes are connected to a voltage source and a region of said record carrier is exposed to radiation, due to decrease in the resistance of said photoconductive layer in the exposed region, current flowing



through said region and between said electrodes heats an area of said thermoplastic layer opposite said exposed region.

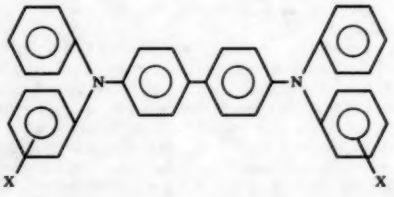
4,397,931

STABILIZED ORGANIC LAYERED PHOTOCONDUCTIVE DEVICE

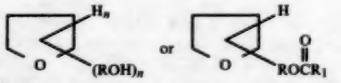
William W. Limburg, Penfield; Dale S. Renfer, Rochester, and Damodar M. Pai, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,672
Int. Cl.³ G03G *5/14*
U.S. Cl. 430—59 **18 Claims**

1. A stabilized organic layered photoresponsive device comprised of a substrate, a photogenerating layer and a charge transport layer in contact with the photogenerating layer, the charge transport layer being comprised of a composition of the following formula:

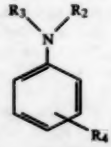


dispersed in a highly insulating and transparent organic resinous material, wherein x is selected from the group consisting of ortho (CH_3), meta (CH_3), para (CH_3), ortho (Cl), meta (Cl), and para (Cl), and dispersed in said transport layer from about 0.1 weight percent to about 10 weight percent of an additive composition selected from the group consisting of



I.

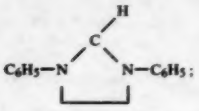
wherein R and R_1 are independently selected from the group consisting of ethylene groups containing from about 1 to about 6 carbon atoms, and n is 0 or 1;

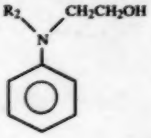


II.

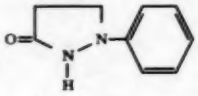
wherein R_2 and R_3 are independently selected from alkyl groups containing from about 1 to about 6 carbon atoms, and R_4 is selected from the group consisting of alkyl groups con-

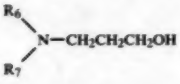
taining from about 1 to about 6 carbon atoms, CH_2OH, $(CH_3)_2OH$, and

III. 

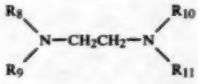


wherein R_2 is an alkyl group;

IV. 

V. 

wherein R_6 and R_7 are alkyl groups; and

VI. 

wherein R_8, R_9, R_{10}, and R_{11} are alkyl groups.

4,397,932

ELECTROPHOTOGRAPHIC COMPOSITION AND ELEMENTS

Hepburn S. Young, Evanston, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Oct. 26, 1981, Ser. No. 314,976
Int. Cl.³ G03G 5/05, 5/06
U.S. Cl. 430—81 **14 Claims**

1. An electrophotographic member comprising a conductive substrate, a photoconductive coating on the substrate formulated of an electron-sensitizer complex formed by reaction of Ninhydrin with a tertiary amine and in which the coating composition includes a polyalkenyl carbazole.

4,397,933

HYDROGENATED AMORPHOUS SILICON PHOTOCONDUCTIVE LAYER

Masao Sugata; Masaki Fukaya, both of Kawasaki; Takashi Nakagiri, Tokyo; Takaaki Yamagata, Yokohama, and Yutaka Hirai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 105,779, Dec. 20, 1979, abandoned.
This application Sep. 15, 1981, Ser. No. 302,454
Claims priority, application Japan, Dec. 28, 1978, 53-165850
Int. Cl.³ G03G 5/082
U.S. Cl. 430—84 **9 Claims**

1. A hydrogenated amorphous silicon photoconductive layer formed on a support, said layer exhibiting infrared absorption peaks at $880\pm10\ cm^{-1}$ corresponding to a normalized mode of a bending mode of an SiH_2 bond and having an intensity I_A and at $970\pm10\ cm^{-1}$ corresponding to the overlap of a peak of a normalized mode of a deformation mode of an SiH bond and a peak which an Si-O bond is concerned and having an intensity I_B, wherein the ratio, I_A/I_B, is not more than 1.0.

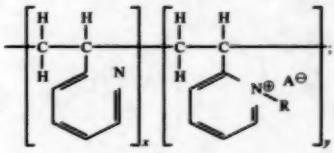
4,397,934

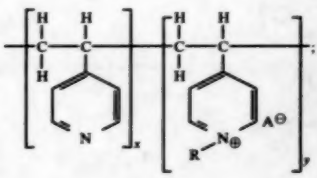
DEVELOPER COMPOSITIONS CONTAINING QUATERNIZED VINYLPYRIDINE POLYMERS, AND COPOLYMERS

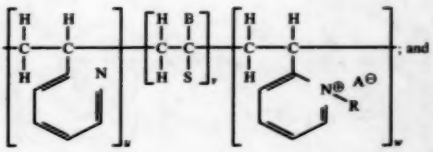
Chin H. Lu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

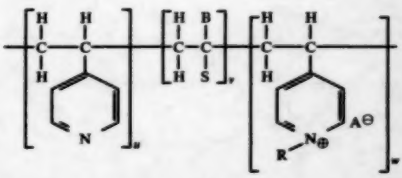
Filed Dec. 31, 1981, Ser. No. 336,242
Int. Cl.³ G03G 9/10, 9/14
U.S. Cl. 430—110 **20 Claims**

1. A positively charged dry developer composition comprised of resin particles, pigment particles, carrier particles, and a charge enhancing component comprised of partially quaternized vinylpyridinium polymer or copolymer selected from the group consisting of those materials of the following formula:









wherein R is an alkyl radical, A is an anion, B is an alkyl radical or hydrogen, S is an acrylate, phenyl, halogen, or cyano radical, x, y, u, v, w represent weight fraction numbers, subject to the provision that the sum of x and y is equal to 1, and the sum of u, v, and w is equal to 1.

4,397,935

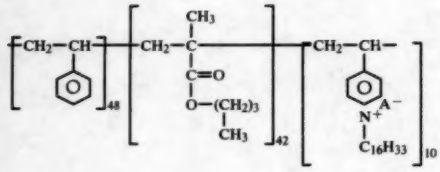
POSITIVELY CHARGED DEVELOPER COMPOSITIONS CONTAINING QUATERNIZED VINYL PYRIDINE POLYMERS

Roger N. Ciccarelli, Rochester, and Thomas R. Hoffend, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

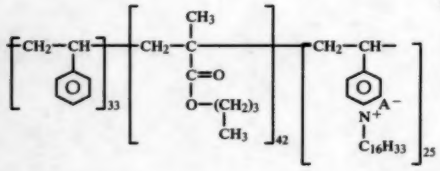
Filed Jan. 18, 1982, Ser. No. 342,031
Int. Cl.³ G03G 9/08
U.S. Cl. 430—110 16 Claims

1. A positively charged dry developer composition comprised of toner resin particles in an amount from about 60 percent by weight to about 80 percent by weight, pigment particles in an amount from about 2 percent by weight to about 20 percent by weight, carrier particles and in an amount of from about 0.1 percent by weight to about 20 percent by weight of a charge enhancing additive selected from the group consisting of those additives of the following formula:

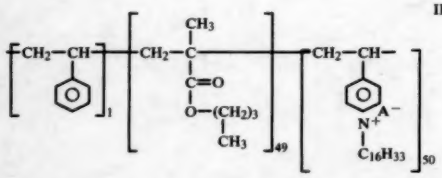
I



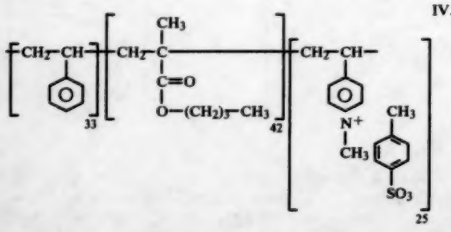
II.



III.



IV.



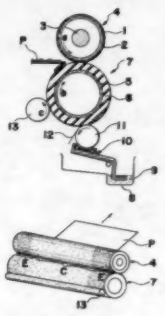
wherein A is the anion chloride, bromide, or methylsulfate.

4,397,936

METHOD OF FIXING DEVELOPED ELECTROPHOTOGRAPHIC IMAGES USES OIL ABSORBING SMOOTHING ROLLER

Toshio Sakata; Soichi Iwao, and Shinji Takiguchi, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Division of Ser. No. 116,605, Jan. 24, 1980, abandoned. This application Dec. 14, 1981, Ser. No. 330,493
Claims priority, application Japan, Jan. 30, 1979, 54-10216
Int. Cl.³ G03G 13/20, 15/20
U.S. Cl. 430—124 12 Claims



1. A method for fixing developed toner powder images onto copy paper sheets in an apparatus comprising upper and lower fixing rollers, an applicator means and a smoothing roller which method comprises:

a. passing said copy paper sheets to be fixed between said upper and lower fixing rollers, at least one of which being provided with heating means and which rollers contact each other for simultaneous rotation,

b. applying an oily offset prevention solution to one of said fixing rollers by said applicator means in direct contact therewith and,

c. contacting under pressure the one of said fixing rollers having said oily offset prevention solution applied thereto with a smoothing roller arranged for simultaneous rotation with said fixing rollers,

said smoothing roller having an oil absorbing property, and said smoothing roller absorbing any excess offset prevention solution applied onto the surface of one of said fixing rollers and also uniformly distributing the offset prevention solution adhering to the surface of one of said fixing rollers over said surface.

4,397,937

POSITIVE RESIST COMPOSITIONS

Nicholas J. Clecak; Dennis R. McKean; Robert D. Miller, all of San Jose; Terry C. Tompkins, Los Altos; Robert J. Twieg, and Carlton G. Willson, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 10, 1982, Ser. No. 347,658
Int. Cl.³ G03C 1/54, 1/60
U.S. Cl. 430—192 12 Claims

1. A positive resist composition comprising a phenolic resin transparent to radiation used for imaging and a sensitizer, characterized in that the sensitizer is a bisester of a 1-oxo-2-diazonaphthalene sulfonic acid and of an unsymmetrical primary or secondary aliphatic diol which is a mixture of geometric and diasterioisomers, the sensitizer being present at a concentration of from 0.05 to 0.95 molal.

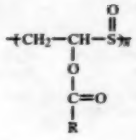
4,397,938
METHOD OF FORMING RESIST PATTERNS USING X-RAYS OR ELECTRON BEAM

Nitin V. Desai, Hightstown, and Emil J. Gavalchin, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,492
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 **12 Claims**

1. A method of forming a patterned layer on a substrate consisting essentially of:

(a) coating the substrate with a composition comprising a solution of a positive acting resist copolymer having a molecular weight of from about 50,000 to about 200,000 and consisting of repeating units represented by the formula



wherein

R is an alkyl group and n is an integer, in a suitable solvent;

(b) drying the coating to form a positive recording medium;

(c) irradiating a predetermined portion of said medium with an electron beam, a modulated electron beam or x-ray; and

(d) developing the irradiated portion of the medium with a suitable developer.

4,397,939
METHOD OF USING A POSITIVE ELECTRON BEAM RESIST MEDIUM

Kurt B. Kilichowski, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,579
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 **11 Claims**

1. In a method of forming a patterned layer on a substrate comprising:

(a) coating said substrate with a composition comprising a positive acting polymeric resist material and a suitable solvent therefor;

(b) drying said coating to form a positive recording medium;

(c) irradiating selected portions of said medium with an electron beam, a modulated electron beam or x-ray; and

(d) developing the irradiated portions of said medium with a suitable developer, the improvement comprising utilizing as the resist material a terpolymer comprising a monomer component and sulfur dioxide in a 1:1 molar ratio, said monomer component comprising from about 10 mole percent to about 50 mole percent of 3-methylcyclopentene and from about 50 mole percent to about 90 mole percent of vinyl acetate, said terpolymer having a molecular weight of from about 300,000 to about 1,200,000.

4,397,940
REDUCING THE LIQUID SOLVENT DEVELOPMENT TIME OF A POLYMERIC RELIEF IMAGE

Jerome D. Wisnosky, and Doris F. Carlson, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jun. 28, 1982, Ser. No. 392,647
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*
U.S. Cl. 430—325 **10 Claims**

1. A method for forming a polymeric relief image in a layer that comprises areas of soluble and insoluble material, which method comprises:

(a) exposing the layer to the vapors of at least one solvent for the soluble material; and

(b) contacting the vapor exposed layer with a liquid solvent which preferentially dissolves the soluble material and which does not affect the insoluble material to thereby form a polymeric relief image.

4,397,941
DRY NONELECTROSCOPIC TONERS FOR TONING TACKY IMAGE SURFACES

Michael G. Fickes, Matawan, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 204,796, Nov. 7, 1980, Pat. No. 4,330,613. This application Dec. 29, 1981, Ser. No. 335,509
Int. Cl.³ G03C *5/04*
U.S. Cl. 430—331 **15 Claims**

1. A dry nonelectroscopic toner comprising pigmented organic resin particles having a size distribution within the range of 0.2 to 30 micrometers and not more than 50 percent of the particles being less than 1 micrometer particle size, the improvement whereby the pigmented particles are surface coated with at least 1% by weight of an antistatic agent in combination with at least 0.5% by weight of slip agent selected from the class consisting of silicone oil having a weight average molecular weight of about 230 to 50,000; saturated hydrocarbons having a weight average molecular weight of about 200 to 10,000; and fluorocarbon compounds having a weight average molecular weight of 500 to 500,000.

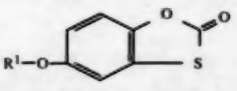
4,397,942
PHOTOGRAPHIC MATERIAL, PROCESS FOR THE PRODUCTION THEREOF, PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES AND NEW COMPOUNDS

Anita von König, Krefeld; Franz Moll, Leverkusen, and Hermann Oediger, Cologne, all of Del.X, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 23, 1981, Ser. No. 314,180
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040910
Int. Cl.³ G03C *1/06, 1/28*
U.S. Cl. 430—446 **8 Claims**

1. A photosensitive material for the production of photographic images containing at least one photosensitive silver halide emulsion layer and, optionally other layers, and having a soluble compound capable of increasing the stability of latent image nuclei in a quantity of from 10 to 5000 mg per mole of silver halide,

wherein said soluble compound corresponds to the following formula



wherein R^1 represents hydrogen, an alkyl group, substituted alkyl group, an acyl group, a substituted acyl group, or a 5- or 6-membered heterocycle.

4,397,943

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shoji Ishiguro, Minami-ashigara; Yoshiharu Fuseya, Odawara; Tatsuo Heki, and Akio Mitsui, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 22, 1982, Ser. No. 391,037
Claims priority, application Japan, Jun. 22, 1981, 56-96288
Int. Cl.³ G03C 1/34
U.S. Cl. 430—609 16 Claims

1. A silver halide photographic light-sensitive material, comprising:

a support base;

a silver halide emulsion layer; and

a polymer containing repeating units having a 1,2,4-triazolo[1,5-a]pyrimidine moiety, the polymer having a molecular weight in the range of 5×10^3 to 3×10^6.

4,397,944

COMPOSITIONS FOR DIAGNOSIS OF DENTAL CARIES ACTIVITY

Tamotsu Komura, Nara; Masayoshi Tsunekawa, Toyonaka, and Sadayuki Yuhda, Suita, all of Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

Filed Dec. 30, 1980, Ser. No. 221,512
Claims priority, application Japan, Dec. 31, 1979, 55-171485
Int. Cl.³ C12Q 1/00, 1/04; G01N 31/16, 33/48
U.S. Cl. 435—4 6 Claims

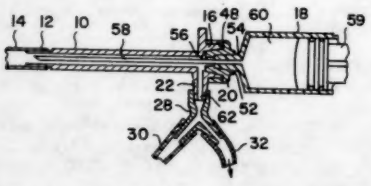
1. Compositions for diagnosis of dental caries activity consisting essentially of: an aqueous solution of water-soluble substances selected from the group consisting of polyvinyl alcohol and polyethylene glycol, said water-soluble substances being present in an amount effective to produce an osmotic pressure higher than the physiological one on the cell membrane of cariogenic bacteria present in dental plaque, and yet free from any buffer action by themselves; and at least one coloring agent giving different colors at pH in the range of 7.5–5.0.

4,397,945

TEST METHOD AND APPARATUS FOR THE PRESENCE OF MICROORGANISM IN SYRINGE

Jean Lemonnier, Le Vesinet, France, assignor to Millipore Corporation, Bedford, Mass.

Filed Jun. 10, 1981, Ser. No. 272,226
Int. Cl.³ C12Q 1/22; C12M 1/00, 1/26
U.S. Cl. 435—31 8 Claims



1. Apparatus for testing the sterility of the contents of a syringe and of a needle attached to said syringe which comprises a tube, an adaptor means attached to a first end of said tube, said adaptor means including a small hole, a spout and a recess, said recess adapted to receive and retain said syringe, means for connecting a second end of said tube to a source of a sterile solution in order to establish fluid communication between said tube and said sterile solution source, means to remove the liquid contents of said syringe from said tube through said spout and to direct said liquid into at least one canister adapted to filter said liquid and to grow microorganisms in said liquid in the absence of microorganisms in the surrounding atmosphere.

4. The process for testing the sterility of liquid contents of a syringe, said syringe having a needle attached thereto which comprises forcing said liquid contents from said syringe, through said needle and into a sterile tube, said tube having an inner surface spaced apart from the outer surface of said needle a distance less than about 3 mm, passing the liquid exiting from said needle along the outer surface of said needle within the tube, removing said liquid from said tube by exit means positioned adjacent the point of entry of said needle in said tube, passing said liquid through a filter under sterile conditions, contacting said filter with a growth medium incubating said growth medium and filtered material under sterile conditions and observing any change in said growth medium in order to determine the presence of a microorganism in said liquid or on said needle.

4,397,946

PROCESS FOR PREPARING ANDROSTANE STEROIDS

Yukio Imada; Tetsu Osozawa, both of Machida; Yuki Morimoto, Yokohama, and Masayuki Kinoshita, Ibaragi, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed May 26, 1981, Ser. No. 267,242
Claims priority, application Japan, Jun. 17, 1980, 55-81943
Int. Cl.³ C12P 33/16; C12N 1/38
U.S. Cl. 435—55 11 Claims

1. A process for producing an androstane steroid which comprises converting a sterol substrate with a microorganism of the genus Mycobacterium using a culture medium containing at least 0.1% by weight of dry egg yolk.

4,397,947

MICROBIAL PROCESS FOR 9α-HYDROXYLATION OF STEROIDS

William J. Marsheck, Mentor, Ohio; James Jiu, Morton Grove, Ill., and Ping T. Wang, Louisville, Ky., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 12, 1981, Ser. No. 273,145
Int. Cl.³ C12P 33/06
U.S. Cl. 435—58 12 Claims

1. A process for 9α-hydroxylating steroids which comprises subjecting a 9-unsubstituted steroid to the microbial enzymatic oxidation action of *Nocardia canicruria* ATCC 31548, by fermentation means.

12. A biologically pure culture of the microorganism *Nocardia canicruria* ATCC 31548, wherein said culture is capable of producing 9α-hydroxyl steroids from 9-unsubstituted steroids by fermentation means in recoverable amounts.

4,397,948

ALKALI METAL BOROHYDRIDE CONCENTRATE

Robert C. Wade, Ipswich, Mass., assignor to Thiokol Corporation, Chicago, Ill.

Division of Ser. No. 272,867, Jun. 12, 1981, abandoned. This application Jul. 14, 1982, Ser. No. 398,056
Int. Cl.³ C08J 9/06
U.S. Cl. 521—82 5 Claims

1. A method of making a cellular article, comprising mixing a solid, substantially inert, and stable borohydride blowing agent concentrate prepared from a dried alkali metal borohydride and a dried inert resinous polymer in which reactive protonic hydrogen atoms are substantially absent; said concentrate mixture consisting essentially of from about 0.5% to 20% by weight of said alkali metal borohydride, less than about 0.1% adsorbed water, balance essentially said dry inert resinous polymer with a resinous polymer and an effective amount of an activating agent capable of donating a proton to said alkali metal borohydride so as to hydrolyze said alkali metal borohydride and thereby form a cellular article; said hydrolyz-

ing occurring while said resinous polymer is in the molten condition.

4,397,949

PREPARATION AND IMMOBILIZATION OF INULINASE

Peter J. H. Peters, and Pieter L. Kerkhoofs, both of Geleen, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jun. 29, 1981, Ser. No. 278,612
Claims priority, application Netherlands, Jun. 27, 1980, 8003723
Int. Cl.[3] C12P *19/14;* C12N *11/10, 11/08, 9/24*
U.S. Cl. 435—99 16 Claims

1. An inulinase-active enzyme preparation having insensitivity to heavy metal ion inhibition obtained by:

(a) culturing an *Aspergillus phoenicis* mold culture for a period of several days under aerobic conditions in an aqueous medium containing a biologically assimilable nitrogen, carbon and phosphorus source and including inulin, at a pH of at least 4.0 up to about 7.0 and at a temperature of about 20° C. to about 40° C., and

(b) recovering the inulinase-active enzyme solution thereby produced.

8. A process for obtaining an inulinase-active enzyme preparation having insensitivity to heavy metal ion inhibition by culturing a microorganism and recovering the inulinaseenzyme consisting essentially in the combination of steps of:

(a) culturing an *Aspergillus phoenicis* mold culture for a period of several days under aerobic conditions in an aqueous medium containing a biologically assimilable nitrogen, carbon and phosphorus source and including inulin at a pH of at least 4.0 up to about 7.0 and at a temperature of about 20° C. to about 40° C.; and

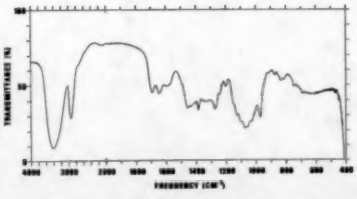
(b) thereafter recovering the inulinase-active enzyme solution which is thereby formed.

4,397,950

PROCESS FOR PRODUCTION OF ANTIBIOTIC U-64,767 USING *STREPTOMYCES MACRONENSIS* NRRL 12566

Lester A. Dolak, Cooper Township, Kalamazoo County; Fritz Reusser, Portage; Thomas M. Castle, Cooper Township, Kalamazoo County; Betty R. Hannon; Alice L. Laborde, both of Kalamazoo Township, Kalamazoo County, and Charles K. Marschke, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 23, 1981, Ser. No. 324,246
Int. Cl.[3] C12P *17/06;* C12N *1/20;* C12R *1/465*
U.S. Cl. 435—125 4 Claims



1. A process for preparing antibiotic U-64,767 which in its essentially pure crystalline form has the following characteristics:

(a) molecular weight of 1191 (mass spectrometry);

(b) color and form of pure solid: white

(c) is highly soluble in 1:1 water:methanol and in glacial acetic acid and poorly soluble in methanol or water alone;

(d) a characteristic ^{13}C-NMR spectrum as shown in FIG. 3 of the drawings;

(e) a characteristic UV spectrum with a maximum absorption at 223 nm

(f) a characteristic infrared absorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings;

(g) has a molecular formula $C_{57}H_{109}N_1O_{24}$; and

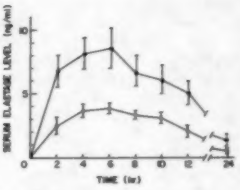
(h) a melting point of 153°–155° C. with decomposition, which comprises cultivating *Streptomyces macronensis* Dietz sp.n., NRRL 12566, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic U-64,767 activity is imparted to said medium.

4,397,951

ELASTASE-CONTAINING COMPOSITION PERMITTING ELASTASE TO BE ABSORBED IN INCREASED AMOUNT

Kazuo Taki, Komae; Ryoichi Machida, Kashiwa, and Kouichi Katayama, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Japan

Filed Jan. 27, 1982, Ser. No. 343,333
Claims priority, application Japan, Feb. 3, 1981, 56/13754
Int. Cl.[3] C12N *9/96, 9/66;* A61K *37/48*
U.S. Cl. 435—188 7 Claims



1. An elastase-containing composition containing 0.5 to 50 parts by weight of sucrose fatty acid ester per part by weight of pure elastase.

4,397,952

PROCESS FOR OBTAINING GLUCOSE DEHYDROGENASE AND MICRO-ORGANISM THEREFOR

Detlef von Hoerschelmann, Wielenbach; Hans Seidel, Tutzing; Gerhard Berger, Iffeldorf; Armin Masuth, Hamburg; Klaus Beaucamp, Tutzing, and Wolfgang Gruber, Tutzing-Unterzeismering, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed May 4, 1981, Ser. No. 260,480
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019450
Int. Cl.[3] C12N *9/04;* C12Q *1/32;* C12R *1/085*
U.S. Cl. 435—190 4 Claims

1. Process for obtaining glucose dehydrogenase which comprises culturing the micro-organism *Bacillus cereus* DSM 1644 in a nutrient medium and obtaining glucose dehydrogenase from the cell mass or from the culture medium.

4,397,953

METHOD AND APPARATUS FOR ANAEROBIC FERMENTATION

Bruno Guazzone, Jona, and Felix Müller, Stäfa, both of Switzerland, assignors to Process Engineering Company S A, Maennedorf, Switzerland

Filed Feb. 17, 1981, Ser. No. 235,134
Claims priority, application Switzerland, Feb. 26, 1980, 1505/80
Int. Cl.[3] C12N *1/00, 1/20, 1/14;* C12M *1/02*
U.S. Cl. 435—243 12 Claims

1. A method of submerged anerobic fermentation of sub-

strates with microorganisms, comprising the steps of introducing microorganisms and a substrate for the microorganisms into a lower conical section and an apertured bottom wall containing a plurality of openings arranged between the lower conical section and the upper cylindrical section; causing the microorganisms to undergo submerged anaerobic fermentation in the substrate; preventing settling of microorganisms in the container during fermentation by recirculating the substrate and microorganisms by withdrawing the fermenting substrate with microorganisms therein from an outlet opening in the upper cylindrical section, and supplying the withdrawn substrate with microorganisms therein into the lower conical section through an inlet opening below said bottom wall at sufficient velocity and quantity to drive the substrate and microorganisms upward in the fermentation container and up through the openings in the apertured bottom wall at sufficient fluid velocity to prevent settling of the microorganisms in the fermentation container, and said substrate and microorganisms being agitated solely by said recirculating through said openings in the apertured bottom wall.

6. An apparatus for submerged anaerobic fermentation of substrates with microorganisms, consisting essentially of a fermentation container for containing a substrate and microorganisms having an upper cylindrical section, a lower conical section, an apertured bottom wall containing a plurality of openings arranged between the lower conical section and the upper cylindrical section, a means for withdrawing substrate and microorganisms from the upper cylindrical section through an outlet opening therein, and means for supplying the withdrawn substrate and microorganisms at sufficient velocity and quantity into the lower conical section through an inlet opening therein below the bottom wall to drive the substrate and microorganisms upward in the container and up through the openings in the apertured bottom wall at sufficient fluid velocity to prevent settling of the microorganisms in the fermentation container, said apertured bottom wall being the sole means contained by said apparatus for agitation of substrate and microorganisms in said fermentation container.

4,397,954

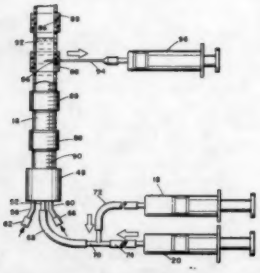
FLOWCELL FRACTIONATOR

Siddhartha Sarkar, Solana Beach, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 155,227, Jun. 2, 1980, Pat. No. 4,326,026. This application Nov. 19, 1981, Ser. No. 323,100

Int. Cl.[3] **A01N** *1/02;* **C12M** *1/00;* **B03D** *1/00*

U.S. Cl. 435—287 **10 Claims**



1. An apparatus for fractionating cells comprising:

a vessel defining an elongate chamber;

a cell suspension fluid inlet centrally positioned at one end of the chamber;

a plurality of nutrient fluid inlets positioned at the one end of the chamber surrounding the cell suspension fluid inlet;

means for pumping a nutrient fluid through the nutrient fluid inlets at a substantially constant rate; and

means for injecting a predetermined quantity of a cell suspension fluid through the cell suspension fluid inlet;

the cell suspension and nutrient fluid inlets being directed to establish a laminar flow longitudinally of the chamber as the nutrient fluid is pumped therethrough and so that the quantity of cell suspension fluid injected through the cell suspension fluid inlet is focussed at a central confluence region of the laminar flow.

4,397,955

TRANSFER APPARATUS FOR MICROORGANISMS

Phyllis Entis, and Michael P. Entis, both of 135 The West Mall Unit 2, Etobicoke, Ontario, Canada M9C 1C2

Filed Mar. 25, 1981, Ser. No. 247,259

Claims priority, application Canada, Nov. 21, 1980, 365248

Int. Cl.[3] **C12M** *1/26, 1/32;* **C12Q** *1/24;* **C12M** *1/00*

U.S. Cl. 435—292 **21 Claims**

1. An apparatus for transferring a growth of microorganisms, said apparatus comprising:

a body;

a transfer material extending across one surface of said body, said transfer material adapted to be brought into contact with a primary medium having a growth of microorganisms on the surface thereof, and to transfer said growth to at least one secondary medium;

a support stand to support said body;

a moveable platform for holding and positioning said primary medium supported by said support stand and adapted to be oriented in a predetermined horizontal, vertical and rotational orientation, said moveable platform facing said transfer material such that when said body is moved or said platform is moved, said transfer material contacts said growth of microorganisms;

a supply reel for supplying the transfer material;

a take-up reel for taking-up said transfer material; whereby said transfer material moves across the surface of said body when the transfer material is supplied by said supply reel and taken-up by said take-up reel.

4,397,956

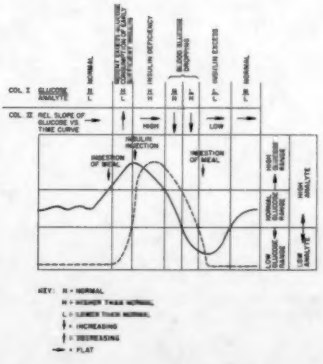
MEANS FOR MONITORING THE STATUS OF CONTROL OF KETOACIDOSIS-PRONE DIABETICS

Edward T. Maggio, 12588 Chetenham La., San Diego, Calif. 92128

Filed Dec. 10, 1981, Ser. No. 329,392

Int. Cl.[3] **G01N** *33/52, 33/64, 33/66*

U.S. Cl. 436—34 **8 Claims**



1. A method for monitoring the status of control of ketoacidosis-prone diabetics comprising measuring, on a single body fluid sample, the concentration levels of glucose and at least one additional indicator analyte, the additional indicator

analyte being present in the body fluid in response to changes in the glucose metabolism of the diabetic within from about 5 minutes to about 12 hours of such change, and using the measured concentration level of the additional indicator analyte in conjunction with the measured concentration level of the glucose to calculate the instantaneous determination of the slope of the change of the glucose concentration and consequently reporting on the status of control of the diabetic.

4,397,957

SPECIFIC-ION GAS-SENSING CARBONATE ANALYZER

Joseph L. Allison, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 24, 1982, Ser. No. 351,813

Int. Cl.³ G01N *27/26, 27/40, 27/56*

U.S. Cl. 436—133 **4 Claims**

1. A method for determining the concentration of a carbonate salt in a solution sample, comprising the steps of:

(a) acidifying the sample to convert the carbonate salt to carbon dioxide;

(b) sweeping the acidified solution with an inert gas, thereby stripping the carbon dioxide from the solution and forming a gas stream containing the carbon dioxide; and

(c) contacting an ion-selective gas-sensing electrode with the gas stream, the electrode including a second solution which is subject to changes in pH when contacted by the gas stream containing different carbon dioxide concentrations, the electrode having an electrical output responsive to the changes in pH of the second solution, whereby the electrical output of the electrode provides a measure of the concentration of the carbon dioxide in the gas stream and the concentration of the carbonate salt in the sample.

4,397,958

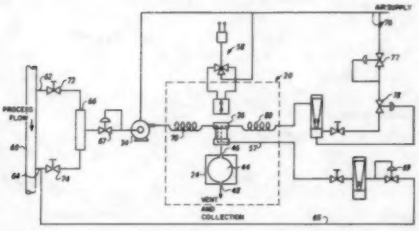
HYDROCARBON ANALYSIS

Theo Vroom, Huizen, Netherlands, assignor to The Foxboro Company, Foxboro, Mass.

Filed Sep. 8, 1981, Ser. No. 300,154

Int. Cl.³ G01N *25/20, 31/12, 33/22*

U.S. Cl. 436—141 **12 Claims**



1. A method of determining the value of a desired characteristic of a hydrocarbon substance comprising the steps of:

injecting a known hydrocarbon substance into a reaction cavity of a reactor block;

reacting said substance with a gas at a known reactor block temperature so as to undergo a cool flame reaction within said cavity;

measuring at least two parameters relating to said cool flame reaction that are each correlatable with the value of said desired characteristic;

varying the reactor block temperature about said known temperature and then repeating the steps above to determine an optimum point for said reaction where a maximum of the fuel components is oxidized during said reaction;

controlling subsequent cool flame reactions with different, known hydrocarbon substances at or near said optimum point to develop a plurality of measured values corresponding to said two parameters;

mapping said measured values onto a multi-dimensional matrix whose array include said two parameters such that a coordinate point in the domain of said matrix is uniquely correlatable to said desired characteristic;

subsequently performing at said otimum point a cool flame reaction on an unknown hydrocarbon substance to yield a measured value correlatable with said matrix; and

correlating said measured value of said unknown hydrocarbon substance with said matrix to determine the value of said desired characteristic of said unknown hydrocarbon substance.

4,397,959

FORCED PRECIPITATION METHOD FOR PREPARING ANTIGEN/ANTIBODY PARTICLES

Karim E. Hechemy, Clifton Park, N.Y., assignor to Research Corporation, New York, N.Y.

Filed Nov. 5, 1980, Ser. No. 204,214

Int. Cl.³ G01N *33/48, 33/54;* **C12Q** *1/00, 1/04, 1/12, 1/10*

U.S. Cl. 436—509 **20 Claims**

1. A process for the preparation of test reagents suitable for serological testing of mammalian sera for the presence of antigens or antibodies, said reagent comprising a test material of antigen or antibody adsorbed on the adsorbent surface of an adsorbent substrate which comprises preparing a solution containing dissolved test material in a solvent in the presence of an adsorbent substrate and adding to the solution an organic liquid precipitating reagent which is miscible with the solvent but does not dissolve the test material or the adsorbent substrate whereby the test material precipitates as an adsorbent on the surface of the adsorbent substrate.

2. A process for the preparation of test reagents for serological testing of mammalian sera for the presence of antigens or antibodies said reagent comprising a test material of antigen or antibody adsorbed on the adsorbent surface of an adsorbent substrate which comprises preparing in a container an aqueous solution said solution containing dissolved test material in the presence of the adsorbent substrate and adding to the solution a mixture of a water soluble alkali metal salt and a lower water soluble alcohol whereby the test material precipitates as an adsorbent on the adsorbent surface.

4,397,960

IMMUNOASSAYS USING $F(ab')_2$ FRAGMENTS

Claude H. Moussebois; Pierre L. Masson, both of Brussels; Jean-Pierre Vaerman, Wavre; Joseph Limet, Marchin, and Cesar L. Cambiaso, Kraainem, all of Belgium, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 5,261, Jan. 22, 1979, abandoned. This application Mar. 26, 1982, Ser. No. 362,334

Claims priority, application United Kingdom, Jan. 26, 1978, 3237/78

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—512 **13 Claims**

2. A method of assaying a fluid by agglutination for an antigen therein, which comprises the steps of:

(a) mixing a sample of the fluid with $F(ab')_2$ fragments of an immunoglobulin which is specific to said antigen to form a reaction mixture, said fragments being bound to water-insoluble particles, wherein, to avoid interference from exogenous Clq and RF, the reaction mixture is substantially free from the whole immunoglobulin and the F(c) fragments thereof;

(b) incubating the mixture to allow reaction between the said $F(ab')_2$ fragments and any said antigen present to cause agglutination of said particles; and

(c) directly determining the extent to which agglutination of said particles has occurred in the mixture and thereby the presence and/or amount of said antigen in the fluid sample.

4,397,961

COMPOSITE BONDING

Elias Snitzer, West Hartford, and James F. Bacon, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 215,282, Dec. 12, 1980, Pat. No. 4,353,966. This application Jan. 11, 1982, Ser. No. 338,822

Int. Cl.³ C03C *3/08, 3/10*

U.S. Cl. 501—15 3 Claims

1. A glass composition particularly adapted to bonding graphite fiber reinforced glass matrix composite materials together consisting essentially of about 47% to about 50% by weight of a low coefficient of thermal expansion, high lead oxide content glaze containing about 40% to about 60% by weight lead oxide, about 46% to about 49% by weight low coefficient of thermal expansion beta-spodumene, and about 1% to about 7% by weight colloidal silica.

4,397,962

ENERGY STORAGE ELEMENT AND METHOD OF MAKING SAME

R. Schockmel, Esch, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Jan. 25, 1982, Ser. No. 342,395

Claims priority, application Luxembourg, Jan. 27, 1981, 83100

Int. Cl.³ C04B *35/04*

U.S. Cl. 501—112 9 Claims

1. A refractory heat-storage element for the storage of thermal energy consisting essentially of 50–95% magnesium oxide, 5–50% iron oxide, and a chemical binder, the mean particle size of the magnesium oxide being between 0.1 mm and 4 mm and the mean particle size of the iron oxide being less than 0.5 mm, wherein the magnesium oxide is in the form of comminuted used refractory brick having a particle size distribution of the Fuller-Bolomey type and containing more than 85% MgO.

4,397,963

METHOD FOR FABRICATING CERMETS OF ALUMINA-CHROMIUM SYSTEMS

Chester S. Morgan, Oak Ridge, Tenn. (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

Filed Oct. 5, 1981, Ser. No. 308,738

Int. Cl.³ C04B *35/10*

U.S. Cl. 501—127 9 Claims

1. A method for fabricating a cermet of Al_2O_3/Cr or Cr alloy, characterized by 0.1 to 5.0 vol.% of metal present as a dispersed phase and comprising the steps of:

(a) coating a ceramic material with a solid hydrocarbon;

(b) contacting said coated material with a solution of a chromium compound;

(c) heating said contacted mixture in a reducing environment to a temperature above the decomposition temperature of said chromium compound and less than the melting temperature of the ceramic material for sufficient duration to yield a particulate compound having a discontinuous chromium phase dispersed within a ceramic phase; and

(d) densifying said particulate to provide a cermet having 0.1 to 5.0 vol.% chromium or chromium alloy present therein as a dispersed phase largely at the boundaries of the ceramic material grains.

4,397,964

PROCESS USING FLUIDIZED BED CATALYST

John K. Pargeter, Warwick, and Umar M. U. Ahmad, Middletown, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation of Ser. No. 130,859, Mar. 17, 1980, abandoned, which is a continuation of Ser. No. 942,939, Sep. 18, 1978, abandoned, which is a division of Ser. No. 868,406, Jan. 10, 1978, Pat. No. 4,196,100. This application Nov. 18, 1981, Ser. No. 322,679

Int. Cl.³ C07C *1/04*

U.S. Cl. 518—713 32 Claims

1. In a catalytic process for converting carbon monoxide and hydrogen contained in a feed gas stream to methane, wherein said feed gas is contacted with a nickel-containing catalyst in a fluidized bed; the improvement comprising contacting said stream with an unsupported particulate catalyst composed of up to about 13% oxygen, less than about 1% sulfur and the balance greater than about 75% nickel, said particulate catalyst having a minimum of fines, said catalyst particles being a composite material consisting essentially of a nickel oxide core and a thin adherent, coherent layer of nickel on said core, the nickel oxide core having been formed as unsupported nickel oxide particles having a particle size of about 0.25 to about 1.2 mm. by a method comprising fluid-bed roasting agglomerates comprised of nickel sulfide in an oxidizing atmosphere, and the nickel layer having been developed under reducing conditions from the nickel oxide particles, said nickel layer being characterized by the presence of microcapillary pores interconnecting with each other and with the outer surface of the particles, said reduced catalyst being non-pyrophoric in the reduced state both before and after use, whereby the feed gas stream can be reacted in the fluidized bed with high throughput in the presence of an active, selective catalyst which is resistant to attrition in said fluidized bed, and whereby said reaction can be carried out without the use of stabilizing equipment for the catalyst.

4,397,965

EXPANDABLE AND CURABLE POLYESTER RESIN COMPOSITION AND METHOD FOR MAKING SAME

Paul E. Stott, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,787

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—128 18 Claims

1. An expandable and curable polyester composition comprising a mixture of

a liquid, ethylenically unsaturated polyester resin;

a peroxide;

an organo metallic promoter; and

a hydrazine having the structural formula RR^1NNHR^2

wherein R and R^1 may be the same or different and are C_1–C_{18} alkyl, C_2–C_{18} alkenyl, C_3–C_{10} cycloalkyl, C_7–C_9 aralkyl, or R and R^1 together are C_2–C_5 alkylene, C_4–C_5 alkenylene or C_3–C_4 oxydialkylene; R^2 is hydrogen, C_1–C_{12} alkyl, C_2–C_{12} alkenyl, C_5–C_6 cycloalkyl, or C_7–C_9 aralkyl.

4,397,966

ALKYLENE OXIDE ADDUCTS OF VICINAL TOLUENEDIAMINE

Theodore O. Stolz, Detroit; Richard A. Moore, and James P. Lutz, both of Trenton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 1, 1981, Ser. No. 326,299

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—167 27 Claims

1. A polyol composition comprising the reaction product of an alkylene oxide and a mixture of initiators comprising vicinal toluenediamine and an initiator selected from the group consisting of ammonia, an aliphatic amine having a molecular

weight of from 20 to 120, an alkanolamine having a molecular weight of from 50 to 120, and mixtures thereof.

4,397,967

FAST CURING NOVOLAC RESIN AND SHELL MOLDING COMPOSITION AND METHODS FOR PRODUCING THE SAME

Roderick A. McDonald, Bothell, Wash., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Division of Ser. No. 43,051, May 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 892,412, Mar. 31, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 168,622

Int. Cl.³ B22C *1/22*

U.S. Cl. 523—145 **10 Claims**

1. A method for producing a shell molding compositon comprising:

coating refractory granules with a novolac resin, said resin comprising from about 2% by weight to about 6% by weight of the combined granules and resin, said novolac resin comprising a methylene chained polyphenylol wherein at least about 50% of the total number of methylene linkages are o-o' and p-p', wherein at least 19% of the total number of methylene linkages and o-o', and wherein at least about 3% of the total number of methylene linkages are p-p'.

4,397,968

PROCESS FOR THE MANUFACTURE OF COPOLYMERS HAVING INCREASED RESISTANCE AGAINST HYDROLYSIS, THE COPOLYMERS AND THEIR USE

Herbert Eck; Klaus Adler; Manfred Hannebaum, and Wilhelm Lechner, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,351

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111602

Int. Cl.³ C08K *9/00*

U.S. Cl. 523—305 **7 Claims**

1. A process for the production of an aqueous dispersion stabilized by a water-soluble polyvinyl alcohol and based on copolymers that comprise at least 60% by weight of monomer units selected from the group consisting of esters of acrylic acid, esters of methacrylic acid, styrene, and mixtures thereof with each other, consisting essentially of subjecting a previously prepared, stabilized dispersion of a monomer mixture containing at least 60% by weight of monomers selected from the group consisting of esters of acrylic acid, esters of methacrylic acid, styrene, and mixtures thereof with each other, said dispersion being an aqueous dispersion stabilized by a water-soluble polyvinyl alcohol employed in an amount of from 4% to 20% by weight, based on the monomers, to polymerization in the absence of emulsifiers at a temperature equal to or in excess of 67° C. in the presence of a free-radical-forming catalyst selected from the group consisting of:

(a) organic catalysts soluble in the monomers and also being at least partially water-soluble, optionally in combination with water-soluble reducing agents, and

(b) inorganic, water-soluble peroxosulfur catalysts, in such a manner that, during the entire duration of the reaction, said monomer mixture is supplied at such a rate by metering in the monomer mixture in the form of a previously obtained emulsion, that the monomer concentration is maintained at less than 20% by weight, based on the total weight of the reaction mixture; and recovering said stabilized dispersion.

4,397,969

AQUEOUS DISPERSIONS OF POLYVINYLBUTYRAL HAVING LOW CONTENT OF HYDROSOLUBLES

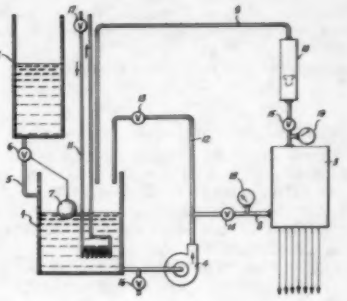
Jean-Marie Pouchol, Lyon, France, assignor to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 897,501, Apr. 18, 1978, abandoned. This application Aug. 28, 1979, Ser. No. 70,648

Claims priority, application France, Apr. 22, 1977, 77 12162

Int. Cl.³ C08L *59/02*

U.S. Cl. 523—310 **10 Claims**



1. A process for preparing an aqueous dispersion of polyvinylbutyral having a particle size of from about 0.01μ to 5μ and containing, dissolved therein, less than about 2.5% by weight of hydrosoluble compounds relative to the weight of polyvinylbutyral, comprising the steps of

(a) bringing an aqueous dispersion of the polyvinylbutyral, formed by reacting polyvinyl alcohol with butyraldehyde in an aqueous medium, in an aqueous solution containing, dissolved therein, an amount of no more than 2.5% by weight of hydrosoluble compounds relative to the weight of polyvinylbutyral, into contact with a semipermeable ultrafiltration membrane in such a manner that a portion of the aqueous dispersion comprising the polyvinylbutyral particles is retained and a sufficient portion of the aqueous solution is filtrated through the membrane in order to remove such an amount of hydrosoluble compounds that the amount of hydrosoluble compounds within the retained portion of the dispersion is reduced to less than about 2.5% by weight relative to the weight of the polyvinylbutyral and

(b) in the course of the ultrafiltration, adding to the retained portion of the dispersion a sufficient amount of deionized water in order to replace at least a major part of the filtrated off portion of the aqueous solution.

4,397,970

PROCESS FOR EPOXY PHOSPHATE COATING RESINS

Kent D. Campbell, Concord, Calif.; Horst G. Langer, Wayland, Mass., and Patrick H. Martin, Danville, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 276,864, Jun. 24, 1981, abandoned. This application Nov. 13, 1981, Ser. No. 321,347

Int. Cl.³ C08L *63/00*; C08K *5/05*

U.S. Cl. 523—402 **22 Claims**

1. In the process of preparing aqueous coating compositions wherein a polyol, polyether epoxide is reacted with a phosphoric acid source material and water in a reaction medium, the reaction mixture is salified with a base and diluted with water and the reaction medium removed from it, the improvement comprising:

(1) employing as said acid source material one deriveable by the reaction of a hydroxylic (P—OH)-blocking agent with (a), P_4O_{10}, (b), a reaction product of P_4O_{10} with less than

six molecular proportions of water or (c), an adduct of (b) with some of the oxirane groups in said epoxide,
(2) employing as said medium a hydrophilic solvent for said epoxide which is acceptable as a component of said coating composition,
(3) phosphorylating said epoxide by reacting P—OH groups in the acid source material—effectively in the absence of free water molecules—with oxirane groups in said epoxide until the content in the reaction mixture of species indistinguishable from H_3PO_4 by titration drops to a preselected level and then
(4) subjecting the resultant reaction product to hydrolysis until the content in the reaction mixture of oxirane-derived phosphomonoester groups rises to a preselected value, and
(5) omitting removal of the reaction medium.

4,397,971

THERMOPLASTIC PLASTICS CONTAINING BURR-SHAPED OR FIBROUS DOPED POLYACETYLENE PARTICLES AND PROCESS FOR THE PRODUCTION THEREOF

Jürgen Hocker, Bergisch-Gladbach, and Rolf Dhein, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 362,999

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113331

Int. Cl.³ C08J 3/12, 3/14; C08L 1/14

U.S. Cl. 524—40 5 Claims

1. A process for the production of a thermoplastically processible polymer granulate or powder which contains of from 0.01 to 50% by weight of burr-shaped or fibrous, doped polyacetylene which comprises mixing the polymer and the polyacetylene in the presence of an inert suspending liquid and removing said liquid.

4,397,972

FLAME RETARDANT POLYSTYRENE AND POLY(PARA-METHYLSTYRENE) COMPOSITIONS CONTAINING OCTAHALOBIPHTHALYL

Bruce A. Marien, East Windsor, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,773

Int. Cl.³ C08K 5/15

U.S. Cl. 524—109 11 Claims

1. A flame-retarded composition comprising:
a. a polymer or copolymer containing at least 50 weight percent of polymerized styrene; or methylstyrene isomers consisting essentially of 0–0.1 percent by weight ortho-methylstyrene, 0–15 percent by weight meta-methylstyrene, and at least 85 percent by weight para-methylstyrene;
b. an inorganic flame retardant; and
c. octahalogenated biphthalyl.

4,397,973

COMPOSITION COMPRISING AN AROMATIC POLYCARBONATE AND A SILOXY-OXYALKYLENE BLOCK COPOLYMER

Steven W. Scott, Evansville, Ind., and Howard A. Vaughn, Jr., Schenectady, N.Y., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 865,293, Dec. 28, 1977, abandoned. This application Aug. 7, 1981, Ser. No. 291,124

Int. Cl.³ C08L 69/00

U.S. Cl. 524—114 12 Claims

1. A plasticized, stabilized, polycarbonate molding composition having a combination of improved melt viscosity and high impact strength comprising in admixture (a) an aromatic carbonate homopolymer of bisphenol-A and (b) at least about 0.3 parts of a siloxy-oxyalkylene block copolymer wherein each copolymer contains a siloxane polymer and at least one oxyalkylene polymer in combination, the siloxane polymer being composed of at least one trifunctional silicon atom, bonded to three oxygen atoms and a single monovalent hydrocarbon radical, and joined to at least three difunctional silicon atoms through oxysilicon bonds, each of said difunctional silicon atoms having two monovalent hydrocarbon radicals bonded thereto and the oxyalkylene polymer being composed of at least five oxyalkylene groups bonded to each other by oxycarbon bonds and bonded at one end to the siloxane polymer through a carbon-oxy-silicon bond and bonded at the other end to a monoether radical.

4,397,974

LOW-HALOGEN-CONTENT, THERMOPLASTIC POLYURETHANE ELASTOMER HAVING IMPROVED FLAME RESISTANCE BY THE ADDITION OF A 4-COMPONENT ADDITIVE COMBINATION, ITS PRODUCTION AND ITS USE

Wilhelm Goyert; Wolfgang Fleige, both of Leverkusen; Hans-Georg Hoppe, Leichlingen, and Hans Wagner, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,165

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3113385

Int. Cl.³ C08L 75/04

U.S. Cl. 524—143 10 Claims

1. A process for the production of a low-halogen-content thermoplastic polyurethane elastomer having improved flame resistance, electrical surface properties and abrasion resistance by the addition of flameproofing agents and fillers, characterized in that
(A) from 2.5 to 24% by weight of a combination of additives are incorporated into a thermoplastic polyurethane elastomer, said additives being present in amounts of
(B) from 1 to 10% by weight of antimony trioxide,
(C) from 0.3 to 6% by weight of chlorinated or brominated compounds having a halogen content of from 50 to 88% by weight,
(D) from 1 to 8% by weight of aluminum hydroxide having a particle size of from 0.1 to 100μ,
(E) from 0.2 to 4% by weight of phosphoric acid tris-ester and,
(F) up to 5% by weight of quaternary tetra-alkyl ammonium salts, all of said percents being based on the total weight of the elastomer and additives, are added to the thermoplastic polyurethane elastomer before, during or after the polyurethane-forming reaction.

4,397,975

HEAT STABILIZED POLYMERS

Alva F. Harris, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 25, 1981, Ser. No. 324,900

Int. Cl.³ C08K 5/41

U.S. Cl. 524—155 4 Claims

1. A polymeric composition having a reduced tendency to crosslink during fabrication, which composition comprises a polyblend of (a) a styrene maleic/anhydride polymer containing 50 to 83% by weight of styrene, from 10 to 35% by weight of maleic anhydride and from 0 to 20% by weight of methyl methacrylate; (b) a polymer selected from the group consisting of acrylonitrile-butadiene-styrene polymers having an acrylonitrile content of at least 8% by weight and styrene-acrylonitrile polymers having an acrylonitrile content from 20 to 70% by weight; and (c) an effective amount from about 0.001 to 0.005 mole per 100 gm of polymer, of a sulfur acid.

4,397,976

INTERLAYER FOR LAMINATED SAFETY GLASS

Takeshi Mori, Kusatsu; Toshiyuki Takashima; Kenichi Asahina, both of Shiga; Toshiharu Matsumiya, Shinnanyo, and Ariyasu Sugita, Yamaguchi, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha and Tokuyama Sekisui Kogyo Kabushiki Kaisha, both of Osaka, Japan

Division of Ser. No. 155,082, Jun. 2, 1980, abandoned. This application Jul. 21, 1981, Ser. No. 285,437

Claims priority, application Japan, May 31, 1979, 54-68502

Int. Cl.³ C08K 3/10; B32B 17/10

U.S. Cl. 524—178 2 Claims

1. An interlayer for a laminated safety glass, said interlayer comprising (A) a thermoplastic resin resulting from copolymerization of (1) 80 to 98.5% by weight of vinyl chloride, (2) 1 to 10% by weight of glycidyl methacrylate and (3) 0.5 to 10% by weight of ethylene, (B) 10 to 40% by weight of a plasticizer, and (C) 1 to 10 parts by weight of an organotin stabilizer per 100 parts by weight of said thermoplastic resin.

4,397,977

TETRAHALOPHTHALATES AS FLAME RETARDANT PLASTICIZERS FOR HALOGENATED RESINS

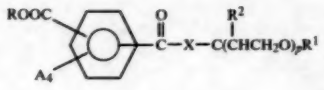
Stanley R. Sandler, Springfield, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 68,987, Aug. 3, 1979, Pat. No. 4,298,517, which is a continuation-in-part of Ser. No. 972,601, Dec. 22, 1978, abandoned. This application May 11, 1981, Ser. No. 262,099

Int. Cl.³ D04H 1/54; C08K 5/18

U.S. Cl. 524—288 5 Claims

1. The process of smoke and flame retarding and plasticizing halogenated resins comprising adding to a halogenated resin, 1 to 100 parts per hundred parts of resin of a plasticizer of the structure:



wherein

(a) the ring can have all possible isomeric arrangements;

(b) R is selected from the group consisting of hydrogen, an alkyl of 1 to 10 carbons, and polyhydroxyalkyl of 3 to 10 carbons;

(c) R^1 is selected from the group consisting of a hydrogen, an alkyl or a substituted alkyl of 1 to 12 carbons, or

(d) R^2 is independently selected from the class consisting of H and CH_3—;

(e) p is an integer of 4 to 50;

(f) x is selected from O or NH; and

(g) A is selected from Cl or Br so as to form a uniform composition.

4,397,978

FIRE SUPPRESSANT COMPOSITION AND USE THEREOF

Linda D. McKinney, and Randall C. Jenkines, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 28, 1982, Ser. No. 372,584

Int. Cl.³ C08L 75/08

U.S. Cl. 524—409 6 Claims

1. A polyurethane composition for providing a unitary backing for tufted or woven carpets which comprises the catalyzed reaction product of a polyurethane forming mixture comprising

(A) a relatively high molecular weight polyether polyol having an average of from 2 to about 8 hydroxyl groups per molecule and an average hydroxyl equivalent weight of from about 500 to about 2200 or a mixture of such polyols;

(B) a relatively low molecular weight polyol having an average of from about 2 to about 8 hydroxyl groups per molecule and an average equivalent weight of from about 31 to about 230 or a mixture of such polyols;

(C) an organic polyisocyanate or polyisothiocyanate having an average of from about 2 to about 4NCX (each X being independently O or S) groups per molecule or a mixture of such isocyanates or isothiocyanates; and

(D) a filler component comprising

(1) an inorganic filler component comprising

(a) hydrated alumina,

(b) lead-containing compound,

(c) antimony compound, and wherein component (a) is present in quantities of from about 10 to about 55 percent by weight of the combined weight of the components of (D-1); component (b) is present in quantities of from about 0.01 to about 2 percent by weight of the combined weight of the components of (D-1); component (c) is present in quantities of from about 46 to about 90 percent by weight of the combined weight of the components of (D-1) and such compounds have an average particle size of from about 0.02 to about 18 microns, and an average surface area of from about 0.7 to about 75 m^2/gram;

(2) a halogen-containing resin containing at least about 85% halogen by weight and an average particle size of from about 9 to about 60 microns;

with the proviso that (a) if it is desired that the urethane backed carpet pass the Vertical Flammability Test employing a flame temperature of greater than about 1550° F. (843° C.), then component (D-1) also contains a hydrated zinc compound in an amount of from about 12 to about 40 percent by weight of the combined weight of the components of (D-1), and (b) if the carpet substrate is woven and has a stitch rate of at least 50 tufts per square inch (7.55 tufts per square centimeter) then a sufficient quantity of

(E) an organometallic viscosity reducing agent is employed to provide a mixture of components (A), (B), (D) and (E) with a viscosity of less than about 14,000 (14 Pa.s) centipoise at 33° C.; and wherein

(1) components (A) and (B) are present in quantities such that the ratio of the number of hydroxyl equivalents contributed by component (B) to the number of hydroxyl equivalents contributed by component (A) is from about 0.8:1 to about 5.5:1,

(2) components (A), (B) and (C) are present in quantities so as to provide an NCX to OH ratio of from about 0.95:1 to about 1.5:1;

(3) component (D-1) is present in quantities of from about 20 to about 60 percent by weight based upon the combined weight of components A, B and D; and

(4) component (D-2) is present in quantities of from about 10 to about 35 percent by weight based on the combined weight of components A, B and D.

4,397,979

POLYMER COMPOSITION CONTAINING LITHIUM, MANGANESE OR ZIRCONIUM NUCLEATING AGENT

Herbert K. Reimschuessel, Morristown, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 3, 1981, Ser. No. 289,618

Int. Cl.³ C08L 67/02, 77/02, 77/06

U.S. Cl. 524—413 9 Claims

1. A composition comprising:

(A) a polymer selected from the group consisting of poly-

mers having one or more carbonyl functions as an integral part of the recurring unit and polymer backbone and mixtures thereof; and

(B) a nucleation agent selected from the group consisting of lithium metasilicate, lithium aluminate, lithium metaphosphate, manganese fluoride, zirconium tetra fluoride, zirconium silicate and mixtures thereof in an amount such that the difference $(\Delta T_c)_m$ between melting point (T_m) and temperature at which crystallization is first observed upon cooling from the melt (T_c) of said composition is at least 1° C. less than the $(\Delta T_c)_m$ of said polymer.

4,397,980

PROCESS FOR PREPARING PTFE POWDERED RESINS CONTAINING PIGMENTS EMPLOYING AMMONIUM CARBONATE OR AMMONIUM BICARBONATE

Theodore G. Tsakumis, Washington, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 17, 1982, Ser. No. 419,545
Int. Cl.³ C08K 3/26
U.S. Cl. 524—424 4 Claims

1. Process for preparing tetrafluoroethylene (TFE) polymer resins having pigment dispersed therein, which comprises

a. mixing a pigment with ammonium carbonate or ammonium bicarbonate or both in a proportion of at least 40% by weight carbonate or bicarbonate,

b. adding the mixture to an aqueous dispersion containing 10–30% by weight of a non-melt-processible TFE polymer,

c. coagulating the TFE polymer and pigment,

d. collecting the resulting pigmented TFE polymer that was coagulated in step (c).

4,397,981

ETHYLENE POLYMER COMPOSITIONS THAT ARE FLAME RETARDANT

Shubei Doi, and Tsutomu Isaka, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,461
Claims priority, application Japan, Dec. 28, 1979, 54-173284
Int. Cl.³ C08K 5/02
U.S. Cl. 524—465 9 Claims

1. An ethylene polymer composition which comprises:

(a) 100 parts by weight of a copolymer comprising, as predominant monomeric units ethylene and about 0.01 to 5% by weight based on the weight of the copolymer of an olefinically unsaturated silane compound represented by the formula,

$$RSiR'_nY_{3-n}$$

wherein: R is an ethylenically unsaturated hydrocarbyl or hydrocarbyloxy group; R' is an aliphatic saturated hydrocarbyl group; Y is a hydrolyzable organic group; and n is 0, 1 or 2, said copolymer being obtained by radical copolymerization of said monomeric ethylene and said silane compound in the presence of a radical initiator under elevated pressure,

(b) 0.001 to 10 parts by weight of a silanol condensation catalyst, and

(c) 10 to 150 parts by weight of a flame retardant which is an organic halogen compound wherein the halogen is chlorine, bromine or iodine.

4,397,982

COMPOSITIONS

Omar M. Boutni, Mt. Vernon, Ind., and Ping Y. Liu, Naperville, Ill., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Oct. 30, 1981, Ser. No. 316,671
Int. Cl.³ C08K 3/34
U.S. Cl. 524—493 16 Claims

1. A thermoplastic molding composition which comprises:

(a) a high molecular weight polycarbonate resin;

(b) a multiphase composite interpolymer which comprises:

(i) a first elastomeric phase polymerized from a C_{1-5} alkyl acrylate; a crosslinking monomer; and a graft-linking monomer, said graft-linking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and

(ii) a final rigid thermoplastic phase polymerized at the surface of the elastomeric phase comprising a C_{1-5} methacrylate; and

(c) a linear low density polyolefin.

12. A thermoplastic molding composition as defined in claim 1 which includes a reinforcing amount of a reinforcing filler.

4,397,983

PROCESS FOR THE PRODUCTION OF POLYURETHANE POLYMER COMPOSITIONS

Edward T. Hill; Bernard L. Kaplan, and Paul V. Farkas, all of Johannesburg, South Africa, assignors to Aerofoam Industries Proprietary Limited, Boksburg North and Polyeth Marketing Proprietary Limited, Johannesburg, both of, South Africa

Filed Dec. 28, 1981, Ser. No. 334,593
Claims priority, application South Africa, Nov. 13, 1980, 80/7025
Int. Cl.³ C08L 75/04
U.S. Cl. 524—790 26 Claims

1. A method of making a polyurethane composition from polyurethane forming reactants, a filler material part at least of which is selected to occlude low molecular mass compounds in the reaction mass, and a coupling reagent for effecting physical or chemical bonding of the filler material and polyurethane compound formed in the reaction, characterised in that the coupling reagent incorporates a steric hindrance function operative to protect the filler material against release of occluded molecules.

4,397,984

USE OF ACRYLATE-BASED EMULSION COPOLYMER AS THE SOLE BINDER FOR A PAPER COATING COMPOSITION

Kurt Wendel, and Guenther Addicks, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,487
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1981, 3103463
Int. Cl.³ B05D 3/02, 3/12
U.S. Cl. 524—814 7 Claims

1. A process for preparing a coated paper product, comprising:

coating a paper substrate with a composition of a finely divided pigment and a synthetic binder, the sole binder and thickener components of the composition being an emulsion copolymer of (a) from 30 to 80% by weight of at least one C_4–C_8 alkyl acrylate or a mixture of at least one C_4–C_8 alkyl acrylate and at least one di-(C_4–C_8-alkyl)-maleate; (b) from 8 to 30% by weight of acrylic acid and/or methacrylic acid; (c) from 0 to 50% by weight of vinyl propionate, vinyl acetate, methyl acrylate; ethyl acrylate and/or vinyl α-branched C_{10}-monocarboxylate; (d) from 0 to 5% by weight of acrylamide, methacrylamide, vinylsulfonic acid, 2-acrylamido-2-methylpropanesulfonic acid and/or acrylonitrile and (e) from 0 to 3% by weight of a crosslinking monomer in the form of an aqueous dispersion.

4,397,985

POLYESTER YARN FINISH COMPOSITION

Robert M. Marshall, Chester; Kimon C. Dardoufas, Richmond, and Stanley D. Lazarus, Petersburg, all of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 137,170, Apr. 4, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,153

Int. Cl.³ B32B *15/06, 25/02*

U.S. Cl. 524—837 54 Claims

1. In an aqueous overfinish composition comprising gamma-glycidoxypropyltrimethoxysilane for application to polyster yarn, the improvement which comprises an effective amount of a catalyst for the gamma-glycidoxypropyltrimethoxysilane selected from the group consisting of urea and a solution of a stannous, iron, nickel, zinc, manganese or chromium salt of 2-ethylhexoic acid or lauric acid in a carrier which is miscible in water.

4,397,986

THERMOPLASTIC POLYESTER BLENDS

Edwin D. Hornbaker, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 3, 1982, Ser. No. 354,468

Int. Cl.³ C08L *51/04, 67/02*

U.S. Cl. 525—64 18 Claims

1. A thermoplastic polyblend composition consisting essentially of:

(A) 95 to 25% by weight of polyethylene terephthalate, or a copolyester or blend thereof containing at least 80 percent by weight of polyethylene terephthalate, and

(B) 5 to 75% by weight of a thermoplastic copolymer of

(1) by weight from about 95 to about 70 percent of at least one vinyl aromatic monomer,

(2) by weight from about 5 to about 30 percent of acrylic acid or methacrylic acid, or both, and

(3) optionally, at least one additional copolymerizable termonomer.

4,397,987

NITRILE RUBBER/EPDM GRAFT BLENDS

Robert J. Cornell, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Continuation of Ser. No. 168,873, Jul. 14, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 422,063

Int. Cl.³ C08L *51/00, 51/04, 33/20*

U.S. Cl. 525—75 5 Claims

1. An elastomeric vulcanizable composition consisting essentially of:

from 50 to 90 parts, by weight, butadiene-acrylonitrile copolymer elastomer and

from 10 to 50 parts by weight, ethylene-propylene-non-conjugated diene terpolymer elastomer grafted with a monomer selected from the group consisting of alkyl acrylate and alkyl methacrylate wherein said alkyl radical in said monomer includes 1–4 carbon atoms;

wherein said total elastomeric content of said composition is in the range of 80 and 99.5% by weight.

4,397,988

BLENDS OF P-METHYLSTYRENE POLYMER AND DIENE-STYRENE OR DIENE-(P-METHYLSTYRENE) BLOCK COPOLYMERS

Anthony M. Sherman, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,773

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.³ C08L *53/02, 25/06, 25/08*

U.S. Cl. 525—98 18 Claims

1. A polymer blend comprising

A. 10 to 90 parts by weight of a polymer comprising polymerized methylstyrene isomers as its major constituent in which the methylstyrene isomers include at least 90% of the para isomer; and

B. 90 to 10 parts by weight of a block copolymer of a conjugated diene and either styrene or methyl styrene, but not both, which block copolymer is selected from the group consisting of

a block copolymer of greater than 40 to 60 weight % of a conjugated diene and from 40 to less than 60 weight % styrene;

a block copolymer of 10 to less than 20 weight % of a conjugated diene and from greater than 80 to 90 weight % styrene; and

a block copolymer of 10 to 60 weight % conjugated diene, and 40 to 90 weight % methylstyrene isomers having a para content of at least 90%.

4,397,989

HIGH SOLIDS COATING COMPOSITION OF AN ACRYLIC POLYMER A POLYESTER POLYOL AND AN ALKYLATED MELAMINE CROSSLINKING AGENT

Paul L. Adesko, Troy, Mich., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Feb. 8, 1982, Ser. No. 346,737

Int. Cl.³ C08L *67/02*

U.S. Cl. 525—162 13 Claims

1. A high solids coating composition comprising at least 40% by weight of a binder of film-forming constituents and up to 60% by weight of a nonaqueous liquid carrier; in which the film-forming constituents consist essentially of about

(1) 10–50% by weight, based on the weight of the binder, of an acrylic polymer consisting essentially of

(a) 10–50% by weight, based on the weight of the polymer, of styrene, methylmethacrylate or mixtures thereof;

(b) 30–70% by weight, based on the weight of the polymer, of an alkyl methacrylate, or an alkyl acrylate each having 2–12 carbon atoms in the alkyl group, and

(c) 15–50% by weight, based on the weight of the polymer, of a hydroxyl alkyl acrylate or methacrylate having 2–4 carbon atoms in the alkyl group; and

the polymer having a number average molecular weight of 500–20,000;

(2) 10–60% by weight, based on the weight of the binder, of a polyester polyol having a number average molecular weight of 1500 or less and an acid number of 20 or less which is the reaction product of

(a) neopentyl glycol and at least one other hindered diol containing two methylol groups wherein each methylol group is attached directly to a cycloaliphatic or aromatic structure or to a tertiary carbon atom, the molar ratio of neopentyl glycol to hindered diol being 2:1 to 6:1, and

(b) a mixture of aromatic and aliphatic dicarboxylic acids wherein the molar ratio of aromatic acid to aliphatic acid is from 1.5:1 to 10:1,

wherein the molar ratio of (a) to (b) is from 1.3:1 to 1.9:1 and wherein the polyol has a hydroxy content of about 3.0–10.0% by weight;

(3) 15–40% by weight, based on the weight of the binder, of a fully or partially alkylated melamine formaldehyde crosslinking agent having 1–4 carbon atoms in the alkyl group.

4,397,990
THERMOSETTING RESINOUS BINDER COMPOSITIONS, THEIR PREPARATION AND USE AS COATING MATERIALS

Petrus G. Kooymans; Johannes J. M. H. Wintraecken; Werner T. Raudenbusch; Josepha M. E. Seelen-Kruijssen, and Gerardus C. M. Schreurs, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 99,363, Dec. 3, 1979, Pat. No. 4,332,711. This application Feb. 16, 1982, Ser. No. 349,296

Claims priority, application Netherlands, Dec. 11, 1978, 7812028

Int. Cl.³ C08L *67/02*

U.S. Cl. 525—167 **6 Claims**

1. A thermosetting binder composition, heat-curable to give an insoluble infusible coating, comprising:

(I) a mixture of:

(1) a non-acidic resinous copolymer of styrene and allyl alcohol essentially free of ethylenically unsaturation, having a molecular weight of at least 900 and a hydroxyl content of at least 0.2 equivalent per 100 g, and

(2) a non-acidic polyester having an acid number of not more than 10 of a polycarboxylic acid cross-linking agent having more than one β-hydroxyl ester group per molecule, at least one of components (1) and (2) having a hydroxyl functionality of more than 2, and the weight ratio of (1) to (2) being from 90:10 to about 50:50,

(II) a transesterification-promoting metal salt or metal complex curing catalyst which is soluble in liquid hydrocarbons.

4,397,991
POLYESTERAMIDE ADHESIVES AND SEALING COMPOUNDS

Manfred Drawert, Froendenberg, and Wolfgang L..oehl, Unna, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Apr. 1, 1982, Ser. No. 364,241

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116349

Int. Cl.³ C08L *67/02*

U.S. Cl. 525—167 **6 Claims**

3. A polyesteramide prepared by the condensation of substantially equivalent amounts of (1) an acid component comprising

(A) a dimerized fatty acid having 16 to 44 carbon atoms, and

(E) a dicarboxylic acid of the formula

$$R^2OOC—R^1—COOR^2,$$

wherein R^1 is aliphatic, cycloaliphatic, aromatic, or araliphatic hydrocarbon having 1 to 8 carbon atoms,

wherein the equivalence ratio of component (A) to component (E) is between 1:0.0 to 0.1:0.9, with (2) an amine and hydroxy component comprising

(B) ethylene diamine,

(C) at least one diamine of the formula

$$H_2N—R—NH_2,$$

wherein R is aliphatic hydrocarbon having 3 to 36 carbon atoms which can be interrupted by one or more hetero atoms, and

(D) diglycolamine

wherein the equivalence ratio of components (B) and (C) to component (D) is between 0.3:0.7 and 0.9:0.1.

5. A mixture of a polyesteramide as in claim 3 with a copolymer of ethylene and vinyl acetate.

4,397,992
PREDISPERSED LIQUID OR LOW MELTING SOLID PEROXIDE VULCANIZING AGENT OR COAGENT COMPOSITIONS

Anders H. Johansson, and Thomas J. Leo, both of Yardley, Pa., assignors to Wyrough and Loser, Inc., Trenton, N.J.

Filed Apr. 21, 1982, Ser. No. 370,499

Int. Cl.³ C08L *51/04, 55/02;* **C08J** *3/20, 3/24*

U.S. Cl. 525—305 **35 Claims**

1. A non-bleeding, predispersed composition useful for dispersing a peroxide vulcanizing agent or coagent into a rubber or plastic stock comprising

(A) from about 20 to about 70 percent by weight of a peroxide vulcanizing agent or coagent, and

(B) a multi-stage graft copolymer comprising

(1) from about 70 to about 90 percent by weight of a hard portion made by graft polymerizing

(a) a monomer or monomers selected from the group consisting of lower alkyl methacrylates, styrene, and mixtures thereof, and

(b) a small but effective amount of a cross-linking agent for said monomer or monomers, in any order onto

(2) from about 10 to about 30 percent by weight of a rubbery portion comprising a polymer or copolymer made by polymerizing

(a) at least one monomer selected from the group consisting of butadiene and lower alkyl acrylates or

(b) a mixture of monomers selected from the group consisting of styrene and butadiene, and acrylonitrile and butadiene.

4,397,993
CURABLE OXIRANE POLYMERS

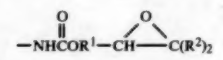
Nancy B. Tefertiller, and Robert F. Harris, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 145,917, May 2, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 339,916

Int. Cl.³ C08F *8/08*

U.S. Cl. 525—328.2 **12 Claims**

1. An oxirane polymer having a carbon-to-carbon polymeric backbone bearing at least two oxirane moieties per polymer molecule wherein the oxirane moieties are represented by the formula:



wherein R^1 is alkylene or inertly substituted alkylene and each R^2 is independently hydrogen, alkyl or inertly substituted alkyl.

4,397,994
HIGH VINYL POLYBUTADIENE OR STYRENE-BUTADIENE COPOLYMER

Yasumasa Takeuchi; Yoshito Yoshimura, both of Yokkaichi; Noboru Ohshima, Suzuka; Mitsuhiko Sakakibara, and Akira Tsuji, both of Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1981, Ser. No. 303,518

Claims priority, application Japan, Sep. 20, 1980, 55-130979; Dec. 16, 1980, 55-176515; Dec. 16, 1980, 55-177831

Int. Cl.³ C08F *8/18, 8/44*

U.S. Cl. 525—332.3 **9 Claims**

1. A high vinyl polybutadiene or styrene-butadiene copolymer obtained by polymerizing 1,3-butadiene alone or with styrene in a hydrocarbon solvent using an organolithium compound as an initiator, and coupling the resulting polymer with a coupling agent, characterized in that

(1) the polybutadiene or styrene-butadiene copolymer contains at least 20% by weight of a polymer having in its

molecular chain a linkage between butadienyl and at least one metal selected from the group consisting of silicon, germanium, tin and lead,

(2) the styrene-butadiene copolymer has a styrene content of 40% by weight of less, and

(3) the polybutadiene or the butadiene portion of said copolymer has a vinyl content of 50 to 95% by weight.

4,397,995

POLYMERIC ANTI-TUMOR AGENT AND METHOD OF PREPARATION

Marvin L. Oftedahl, Warson Woods; Howard M. Solomon, Ballwin, both of Mo., and James A. Webster, Dayton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1980, Ser. No. 221,087

Int. Cl.³ C08F *222/40, 8/30;* **A61K** *31/74*

U.S. Cl. 525—374 **7 Claims**

1. The method of making an improved pharmaceutically active derivative of a copolymer of an olefin monomer having from 2 to about 4 carbon atoms and an α,β-unsaturated polycarboxylic anhydride having from 4 to about 6 carbon atoms, said copolymer having a number average molecular weight of from about 300 to about 1500, comprising reaction said copolymer with aqueous ammonia in an amount sufficient to form an aqueous solution of a copolymer derivative having half-amide, half-ammonium salt groups, spray drying said aqueous solution to provide a substantially dry particulate solid form of said copolymer derivative, and then thermally imidating said substantially dry copolymer derivative by simultaneous treatment with elevated temperature and removal of water until from about 5% to about 40% by weight of said derivative groups are converted to imide groups.

4,397,996

PROCESS FOR PREPARING POLYMERIC OXIMES AND COMPOSITIONS CONTAINING SAME

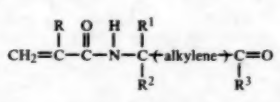
Charles K. Chiklis, and Alan N. Schuler, both of Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 22, 1981, Ser. No. 266,364

Int. Cl.³ C08F *8/32*

U.S. Cl. 525—380 **23 Claims**

1. A process for preparing a polymeric oxime which comprises the steps of introducing into an aqueous polymerization medium a portion of a polymerizable monomer to be polymerized, said polymerizable monomer having the formula



wherein R is hydrogen or methyl, R^1 is hydrogen, alkyl of from 1 to 4 carbon atoms, benzyl or phenyl, R^2 is alkyl of from 1 to 4 carbon atoms, benzyl or phenyl, alkylene is a divalent alkylene radical having 1 to 2 carbon atoms, and R^3 is hydrogen, alkyl of from 1 to 4 carbon atoms or phenyl; initiating the emulsion polymerization of said monomer, and while maintaining said polymerization, introducing substantially uniformly over the course of the polymerization, the remaining polymerizable monomer to be polymerized, thereby to provide a polymeric latex of polymeric particles of said polymerizable monomer in a water medium; contacting said polymeric latex with an organic solvent for said latex particles in an amount sufficient to effect swelling of the polymeric particles in said medium; and oximating the swollen polymeric particles by reaction with hydroxylamine salt and an amount of alkalinity sufficient to provide free hydroxylamine for said oximation but insufficient to effect appreciable alkali solubilization of the resulting oximated polymeric particles.

4,397,997

ULTRATURBULENT COUPLING OF POLYMERIC DIAZONIUM SALTS

Daniel J. Dawson, Los Altos, and Phillip J. Brock, Sunnyvale, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Filed Nov. 4, 1981, Ser. No. 318,251

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—384 **9 Claims**

1. The process for coupling a slow-reacting coupling agent to a polymeric diazonium salt which comprises:

a. circulating via a centrifugal pump a first stream of an alkaline aqueous solution containing a predetermined quantity of said coupling agent and

b. injecting into said first stream immediate to the impellor of said centrifugal pump a second stream of an acidic aqueous solution containing from 1 to 15% by weight of said polymeric diazonium salt, the volume of flow of said first stream being not less than 45 times that of said second stream and the molar equivalents of coupling agent being at least 1.0 times the total molar equivalents of polymeric diazonium salt.

4,397,998

CURABLE EPOXY COMPOSITIONS SUITABLE FOR USE IN RIM PROCESSES

Harold E. De La Mare, and Thomas F. Brownscombe, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 14, 1981, Ser. No. 330,413

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—420.5 **16 Claims**

1. A rapid curing, storage stable, thermosetting composition, especially suitable for use in reaction injection molding processes comprising

(1) an epoxy compound containing more than one vicinal epoxy group,

(2) a curing amount of at least one amino compound containing at least three amino hydrogens,

(3) a catalytic amount of lithium nitrate or calcium nitrate, and

(4) from about 0.1 to about 3 parts of a polyalkylene ether glycol per 100 parts by weight of epoxy compound.

4,397,999

POLYIMIDAZOLE AND POLYIMIDAZOPYRROLONE PRECURSOR STAGES AND THE PREPARATION THEREOF

Hellmut Ahne, Röttenbach; Eberhard Kühn, Hemhofen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,455

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933819

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—426 **5 Claims**

1. A polymeric polyimidazole precursor comprising the reaction product of (a) an olefinically unsaturated 1,2-monoepoxide and (b) an amino group-containing polycondensation product of (1) a member selected from the group consisting of an aromatic tetraamino compound and a heterocyclic tetraamino compound and (2) a member selected from the group consisting of a dicarboxylic acid chloride and an ester of a dicarboxylic acid.

4,398,000

GOLF BALL

Nobuyuki Kataoka, Hidakamachi; Tasuku Saito, Tokorozawa; Tsutomu Matsunaga, Iruma; Chiaki Tanaka, Chita; Yoko Furuta, and Nagayoshi Naito, both of Nagoya, all of Japan, assignors to Bridgestone Tire Co., Ltd. and Toray Industries, Inc., both of, Japan

Filed Aug. 7, 1981, Ser. No. 291,046

Claims priority, application Japan, Aug. 13, 1980, 55-110369

Int. Cl.[3] **C08F** *283/00, 283/02;* **C08G** *63/76;* **C08L** *67/00*

U.S. Cl. 525—437 **4 Claims**

1. In a solid type golf ball comprising a central core and an outer cover for the core, the improvement wherein the main component of the outer cover is at least one polyetherester block copolymer containing the following X, Y and Z units:

X: Butylene terephthalate unit

Y: Ester unit other than butylene terephthalate

Z: Polyetherester unit derived from a dicarboxylic acid component containing terephthalic acid and poly(alkylene oxide) glycol, having a number average molecular weight of 400 through 3000, wherein the X, Y and Z units are present in the following amounts:

30% by weight $\leqq$ X $\leqq$ 80% by weight

0% by weight $\leqq$ Y $\leqq$ 50% by weight

20% by weight $\leqq$ Z $\leqq$ 70% by weight.

4,398,001

TERPOLYMER RESIST COMPOSITIONS

Ying Y. Cheng; Barbara D. Grant; Lester A. Pederson, and Carlton G. Willson, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,710

Int. Cl.[3] **C08L** *61/10;* **C08G** *2/02*

U.S. Cl. 525—502 **11 Claims**

1. A resist composition comprising a novolac resin and a sensitizer characterized in that said sensitizer is a terpolymer of sulfur dioxide, an olefin hydrocarbon and an unsaturated ether, said terpolymer containing olefin monomer and sulfur dioxide in a ratio of 1 to 1, with the olefin monomer comprising hydrocarbon and ether in a ratio between 4:1 and 1:4.

4,398,002

EPOXY RESINS FROM HYDROXY BENZAMIDES

James L. Bertram, Lake Jackson, Tex., and Edmund P. Woo, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

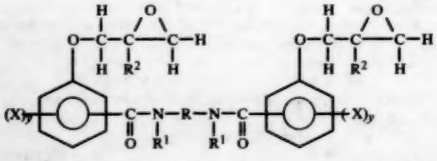
Division of Ser. No. 240,742, Mar. 5, 1981, Pat. No. 4,367,328. This application May 13, 1982, Ser. No. 377,733

Int. Cl.[3] **C08G** *59/28, 59/32*

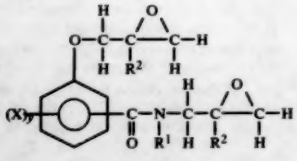
U.S. Cl. 525—523 **5 Claims**

1. The product resulting from curing a curable composition containing an epoxy resin or mixture of epoxy resins represented by the following formulas I, II or III

FORMULA I



FORMULA II



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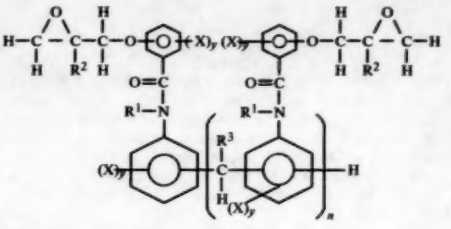
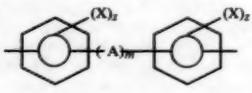
FORMULA III

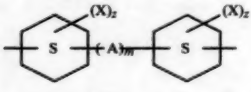


wherein each R is a divalent hydrocarbyl group having from 1 to about 18 carbon atoms, a group represented by the following formulas IV, V, VI or VII

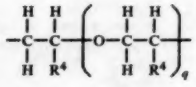
FORMULA IV



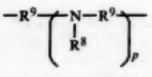
FORMULA V



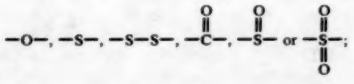
FORMULA VI



FORMULA VII

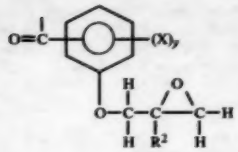


or R can combine with R^1 so as to form a stable heterocyclic ring with the nitrogen atoms; each A is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms,



each R^1 is independently hydrogen, a 2,3-epoxypropyl group, a 2-alkyl-2,3-epoxypropyl group, a monovalent hydrocarbyl group, or a hydroxyl substituted monovalent hydrocarbyl group, said hydrocarbyl groups having from 1 to about 9 carbon atoms, said alkyl having from 1 to about 4 carbon atoms; each R^2 and R^3 is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; each R^4 is independently hydrogen, a hydrocarbyl group or a halogen substituted hydrocarbyl group having from 1 to about 9 carbon atoms; each R^8 is independently selected from the group represented by the following formula XIV

FORMULA XIV



or the same group as R^1 except that R^8 cannot be hydrogen; each R^9 is a divalent hydrocarbyl group having from two to about 4 carbon atoms; each X is independently hydrogen, chlorine, bromine or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 9 carbon atoms; each m independently has a value of zero or 1; n has an average value of from about 0.01 to about 6; p has an average value of from 1 to about 10; q has an average value of at least 1; and each y and z independently has a value of 1 or 2.

4,398,003

PROCESS FOR PREPARING THERMOSET POLYMER SPHERES

Robert S. Irwin, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 182,208, Aug. 28, 1980, abandoned. This application Nov. 27, 1981, Ser. No. 325,405

Int. Cl.³ C08G *59/16, 59/00*; C08F *283/10*

U.S. Cl. 525—531 **12 Claims**

1. In a process for preparing essentially non-porous thermoset polymer beads which comprises polymerizing an aqueous suspension of an ethylenically polymerizable, thermosettable resin, said aqueous suspension consisting essentially of (1) water (2) an ethylenically unsaturated thermosettable resin selected from vinyl ester resins or mixture of such resins, (3) a catalyst, (4) an accelerating quantity of an accelerator for the catalyst and (5) a suspending agent and subsequently recovering the essentially non-porous polymer spheres therefrom; the improvement which comprises employing an organic water soluble suspending agent in which the thermosettable resin is insoluble; wherein said vinyl ester resin is prepared by reacting a polyepoxide or mixture of polyepoxides and (a) unsaturated monocarboxylic acid, (b) unsaturated dicarboxylic acid half ester or (c) mixtures thereof; and wherein the quantity of component (4) is from about 0.1 to about 5 percent by weight of component (2).

4,398,004

OLEFIN POLYMERIZATION WITH PHOSPHATED SILICA-CHROMIUM CATALYST WITH BORON-CONTAINING COCATALYST

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 221,754, Dec. 31, 1980, Pat. No. 4,364,840. This application Sep. 27, 1982, Ser. No. 424,793

Int. Cl.³ C08F *4/02, 4/62*

U.S. Cl. 526—98 **10 Claims**

1. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms with a catalyst system comprising

(a) a catalyst comprising a chromium oxide on a phosphated silica-containing base wherein there is present 0.01 to 0.5 mg P/m^2 of silica surface as measured by BET nitrogen sorption;

(b) a cocatalyst selected from trihydrocarbyl boron compounds, boron alkoxides and halogenated alkyl boron compounds; and

recovering a polymer.

4,398,005

NOVEL POLYMERIZATION CATALYST AND PROCESS FOR USING SAME TO POLYMERIZE OLEFINS

Harold E. Swift, Gibsonia, and Richard W. Landes, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 227,733, Jan. 23, 1981, Pat. No. 4,367,161. This application Jul. 26, 1982, Ser. No. 401,628

Int. Cl.³ C08F *4/64, 10/00*

U.S. Cl. 526—119 **39 Claims**

1. A process for the polymerization of olefins which comprises contacting said olefin at elevated temperatures and elevated pressures with an activator and a solid, particulate, catalyst complex prepared by a process comprising reducing $TiCl_4$, containing the resultant reduced solid with a complexing agent to obtain a treated solid and contacting the treated solid with $TiCl_4$ in the presence of silica which has been treated with an aromatic ester.

4,398,006

PROCESS FOR PRODUCING POLYBUTENE-1

Kazumi Tsubaki; Noriaki Koto, and Toyohiko Abe, all of Ichihara, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,803

Claims priority, application Japan, Sep. 5, 1980, 55-123091

Int. Cl.³ C08F *4/64, 10/08*

U.S. Cl. 526—127 **14 Claims**

1. A process for producing polybutene-1 which comprises polymerizing butene-1 in the presence of a catalytic amount of a catalyst system comprising a solid catalytic component (A) obtained by reacting a reaction product (a) of a Grignard reagent with a chain or cyclic hydropolysiloxane having the unit

$$R_a^1H_bSiO_{\frac{4-a-b}{2}}$$

(R^1 represents an alkyl, aryl, aralkyl, alkoxy or aryloxy group; a is 0, 1 or 2; b is 1, 2 or 3 and $a+b \leqq 3$) with at least one compound having the formula

$$R^2_nM^{(z)}X_{z-n}$$

(R^2 represents a C_1 to C_{12} hydrocarbon moiety; M represents Al or Si; z represents atomic value of 3 or 4; X represents a halogen atom; n is 0, 1 . . . (z−1)) to obtain a reaction product (b) and further reacting said reaction product (b) with at least one titanium halide in the presence of an organic acid ester to produce said solid catalytic component (A), and further comprising a trialkylaluminum compound (B), an organic acid ester (C); and an organoaluminum compound (D) having the formula

$$AlR^3{}_2Cl$$

(R^3 represents a C_1 to C_8 hydrocarbon moiety), at a molar ratio of said organoaluminum compound (D) to said trialkylaluminum compound (B) ranging from 0.1 to 10.

4,398,007

DENTURE-BASE RESIN COMPOSITION AND METHOD FOR USING THE SAME

Takao Kubota, Sayama, and Shigenobu Kusakai, Tokyo, both of Japan, assignors to G-C Dental Industrial Corp., Tokyo, Japan

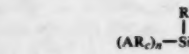
Filed Oct. 22, 1980, Ser. No. 199,625

Int. Cl.³ C08F *130/08*

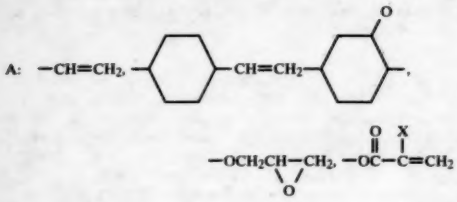
U.S. Cl. 526—273 **4 Claims**

1. A denture-base resin composition comprising a methyl methacrylate monomer containing 0.5 to 20% by weight of a

particular silane compound expressed by the general formula:



wherein
D: a hydrolyzable group
n: an integer of 1, 2 or 3
b: an integer of 0, 1 or 2
n+b: an integer of 1, 2 or 3
R′: is a monovalent hydrocarbon group
R: an alkylene group having 1 to 4 carbon atoms
c: an integer of 0 to 1



wherein X: a hydrogen atom or a hydrocarbon group having 1 to 6 carbon atoms, and mixed with 0.5 to 10% by weight of a unsaturated carboxylic acid.

4,398,008

THICK POLYOL (ALLYL CARBONATE) POLYMERIZATES AND METHOD OF PREPARING SAME

Michael S. Misura, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 7, 1981, Ser. No. 327,871
Int. Cl.³ C08F *118/00*
U.S. Cl. 526—314 **7 Claims**

1. A method of forming a thick casting of polyol (allyl carbonate) comprising:
(a) forming a monolithic rigid sheet comprising partially cured polymeric polyol (allyl carbonate);
(b) forming a pool of polyol (allyl carbonate) monomer in contact with the monolithic rigid sheet of partially cured polymer; and
(c) thereafter curing the monolithic rigid sheet of partially cured (monolithic polymerizate) polymer and the monomer in contact therewith whereby to form a single phase (second polymerizate) casting thicker than the monolithic rigid sheet.

4,398,009

POLYOXAZOLE PRECURSOR AND THE PREPARATION THEREOF

Hellmut Ahne, Röttenbach; Eberhard Kühn, Hemhofen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,462
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933828
Int. Cl.³ C08G *65/40*
U.S. Cl. 525—426 **6 Claims**

1. A polyoxazole precursor selected from the group consisting of an oligomeric and a polymeric precursor comprising the addition product of (a) an olefinically unsaturated 1,2-monoepoxide and (b) an hydroxyl group-containing polycondensation product of (1) a member selected from the group consisting of an aromatic dihydroxydiamino compound and a heterocyclic dihydroxydiamino compound with (2) a member selected from the group consisting of a dicarboxylic acid chloride and an ester of a dicarboxylic acid.

4,398,010

METHOD FOR ACCELERATING THE ACTIVITY OF A HYDROSILATION CATALYST

James R. Adkins, Adrian, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Filed Dec. 7, 1981, Ser. No. 328,162
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—15 **15 Claims**

1. A method for accelerating the hydrosilylation activity of a nitrogen containing platinum catalyst which comprises reacting an ammonium platinum silicon complex with a compound containing olefinic unsaturation which is selected from the group consisting of silanes, siloxanes and organic hydrocarbons having up to 10 carbon atoms and a basic compound selected from the group consisting of alkali metal carbonates, alkaline earth metal carbonates and alkali metal hydroxides, said ammonium platinum silicon complex is obtained from the reaction of a platinum halide and an aminofunctional silicon compound.

4,398,011

Patent Not Issued For This Number

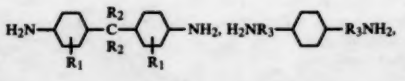
4,398,012

TRANSPARENT COPOLYAMIDE FROM CAPROLACTAM, CYCLIC DIAMINE AND CYCLIC DICARBOXYLIC ACID

Robert G. Merrill, Chester; Robert A. Lofquist; Gene C. Weedon, both of Richmond, all of Va.; John C. Haylock, Sparta, N.J., and Ian C. Twilley, Chester, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 19, 1982, Ser. No. 336,976
Int. Cl.³ C08G *69/14*
U.S. Cl. 528—84 **11 Claims**

1. A transparent, alcohol resistant, hot water resistant, thermoplastically formable copolymer of
(A) 80.4 to 88.8 weight percent epsilon-caprolactam and the remaining
(B) 11.2 to 19.6 weight percent of substantially equimolar portions of a moiety derived from a (1) diamine or diisocyanate selected from the group consisting of



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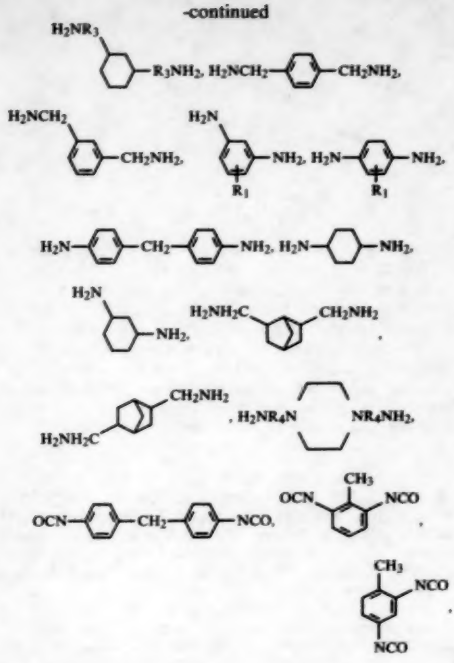
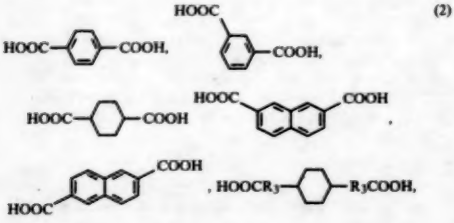


and mixtures thereof, and a diacid selected from the group consisting of

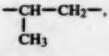


(2)

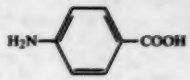
and mixtures thereof,

wherein R_1 is independently selected from the group consisting of —H, —CH_3, CH_2CH_3,

and —$CH_2CH_2CH_3$, R_2 is independently selected from the group consisting of —H, —CH_3 and —CH_2CH_3, R_3 is independently selected from the group consisting of —CH_2— and —CH_2CH_2—, and R_4 is independently selected from the group consisting of —CH_2—, —CH_2CH_2—, —$CH_2CH_2CH_2$— and



or (C) 11.2 to 19.6 weight percent of



wherein said copolymer is thermoformable at a temperature greater than the glass transition temperature of the copolymer and withstands exposure to an alcohol for extended periods without becoming translucent, dissolving or flowing.

4,398,013

ACCELERATOR FOR ANHYDRIDE-CURED EPOXY RESINS

Donald S. Johnson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 14, 1981, Ser. No. 311,269

Int. Cl.³ C08G 59/68

U.S. Cl. 528—89 **11 Claims**

1. A process for curing polyepoxides which comprises:

(a) preparing an admixture comprising:

(i) a polyepoxide having more than one epoxy group; and

(ii) at least 0.5 equivalents of at least one member selected from the group consisting of polycarboxylic acid, polycarboxylic acid anhydride or mixtures thereof;

(b) adding to said admixture from about 0.01% to about 10% by weight of said admixture of a diarylhalonium complex salt accelerator having the formula

$$[(R)_a(R')_bX]_c^+[MQ_d]^{-(d-e)}$$

where R is a monovalent organic radical, R' is a divalent aromatic organic radical X is a halogen radical such as I,Br,Cl, etc., M is a metal or metalloid and Q is a halogen radical such as Cl,F,Br,I, etc., a is a whole number equal to 0 or 2, b is a whole number equal to 0 or 1, the sum of a+b is equal to 2 or the valence of X, c+d−e, e+the valence of M and is an integer equal to 2 to 7 inclusive, and d is >e and is an integer having a value up to 8;

(c) exposing said admixture to a means for initiating a curing reaction; and

(d) allowing said curing reaction to continue until substantially complete.

4,398,014

SULFOXONIUM SALTS AND THEIR USE AS POLYMERIZATION CATALYSTS

George E. Green, Stapleford; Edward Irving, Burwell, and Bernard P. Stark, Great Shelford, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,275

Claims priority, application United Kingdom, Nov. 4, 1980, 8035382

Int. Cl.³ C08F 2/50

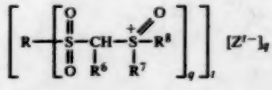
U.S. Cl. 528—89 **14 Claims**

1. A polymerizable composition which comprises

(a) a compound, or mixture of compounds, capable of being transformed into a higher-molecular weight material under the influence of a cationic catalyst,

(b) an effective amount of an aromatic sulfonylsulfoxonium salt of the formula

VI



where

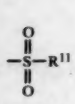
q is an integer of from 1 to 4,

R denotes an aliphatic, cycloaliphatic or aromatic group of valency q, having from 1 to 25 carbon atoms and being directly linked through a carbon atom thereof to the sulfur atom of the indicated adjacent sulfonyl group,

R^6 denotes a hydrogen atom, an alkyl or aralkyl group of 1 to 25 carbon atoms, an acyl group of formula —COR^9 or a group of formula

—CO—NH—$(CO)_r$—R^{10} VII

or

 VIII

one, but not both, of R and R^6 denoting a homocyclic aromatic group of 6 to 25 carbon atoms or a heterocyclic aromatic group of 4 to 25 carbon atoms containing one or more nitrogen, oxygen or sulfur atoms in the aromatic ring,

R^7 denotes an alkyl group of 1 to 12 carbon atoms, an alkenyl group of 2 to 6 carbon atoms, a cycloalkyl group of 3 to 8 carbon atoms, a cycloalkylalkyl group of 4 to 10 carbon atoms, an aryl group of 6 to 24 carbon atoms, or an aralkyl group of 7 to 16 carbon atoms,

R^8 has the same meaning as R^7, or R^8 is a dialkylamino group of 2 to 6 carbon atoms, or if R^7 is alkyl of 1 to 12 carbon atoms, R^8 may also be an arylamino group of 6 to 8 carbon atoms,

R^9 denotes an alkyl, aryl, or aralkyl radical of 1 to 25 carbon atoms, directly linked through a carbon atom thereof to the indicated —CO— group,

r is zero or 1,

R^{10} denotes an alkyl, aryl, or aralkyl radical of 1 to 25 carbon atoms, directly linked through a carbon atom thereof to, if r denotes zero, the indicated nitrogen atom, or if r denotes 1, the carbon atom of the indicated adjacent carbonyl group,

R^{11} denotes an alkyl, aryl, or aralkyl radical of 1 to 25 carbon atoms, directly linked through a carbon atom thereof to the indicated sulfur atom,

t represents 1, 2, or 3, and

Z^{t-} denotes a t-valent anion of a protic acid.

4,398,015

FIBER-FORMING POLYESTERS OF AROMATIC KETOHYDROXY ACIDS

August H. Frazer, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

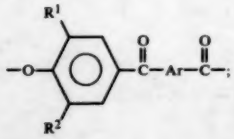
Filed Aug. 3, 1982, Ser. No. 404,871

Int. Cl.³ C08G 63/06

U.S. Cl. 528—125 **9 Claims**

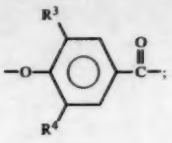
1. Fiber-forming melt-spinnable polyester that is optically anisotropic in the melt and consists essentially of the following amounts of recurring units of the structural formulas:

(a) 25–100 mol %



and

(b) 0–75 mol %



wherein

both of R^1 and R^2 are H, CH_3 or Cl or R^1 is H and R^2 is CH_3 or Cl;

both of R^3 and R^4 are H, CH_3 or Cl or R^3 is H and R^4 is CH_3 or Cl; and

Ar is m- or p-phenylene,

provided, however, when the amount of (a) is 90–100 mol %, Ar is m-phenylene in at least 30% of the (a) units, and provided further, however, when the amount of (a) is 100 mol % and only one species of (a) is present, R^1 and R^2 are both Cl, and provided still further, however, in copolyesters consisting essentially of two or more different species of (a), only one of said species is substituted and R^1 and R^2 therein are Cl.

4,398,016

PROCESS FOR PRODUCING A RESIN FOR PRINTING INK, AND A COMPOSITION COMPRISING SAID RESIN

Minoru Homma; Noboru Okoshi; Kin-ichi Kudo; Soichi Shimoyama, all of Chiba, and Nansei Tashiro, Sodegaura, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Sep. 16, 1981, Ser. No. 302,850

Claims priority, application Japan, Sep. 30, 1980, 55-135184; Sep. 30, 1980, 55-135185; Sep. 30, 1980, 55-135186

Int. Cl.³ C08G 8/32, 8/34; C09D 11/06, 11/08

U.S. Cl. 528—158.5 **6 Claims**

1. A process for preparing a rosin modified phenolic resin modified with an animal or vegetable oil which comprises reacting in a single step (a) an animal or vegetable oil having an iodine value of 100 to 210 or containing a hydroxyl group, (d) a rosin, (e) an alcohol, and optionally, at least one of (f) acids and (g) hydrocarbon resins, at a temperature of from 100° to 160° C. for 1 to 9 hours and then further reacting at 200° to 280° C. for from 3 to 10 hours, without reacting the phenol (a) or the formaldehyde yielding substance (b), in advance.

4,398,017

COPOLYESTERS

Santos W. Go, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 9, 1982, Ser. No. 356,555

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ C08G 63/66

U.S. Cl. 528—173 **7 Claims**

1. A solid thermoplastic copolyester consisting essentially of the polymeric reaction product of

(A) reactant(s) selected from isophthalic acid, terephthalic acid and their C_1 to C_4 alkyl esters, and any mixture thereof in any proportion,

(B) reactants, 1,3 bis(2-hydroxyethoxy)benzene plus ethylene glycol, and optionally one or more other ester forming dihydroxy organic hydrocarbon reactant(s), and optionally,

(C) reactant, bis(4-β-hydroxyethoxyphenyl) sulfone, wherein

(1) the amount of said 1,3 bis(2-hydroxyethoxy)benzene is 5–90 mol percent of the amount of A reactants,

(2) the combined amount of B and C reactants is about 110 to 300 mol percent of the amount of A reactants,

(3) the amount of said other ester forming dihydroxy organic

hydrocarbon reactant(s) is zero to 20 mol percent of the amount of said A reactants, and

(4) the combined amount of said (C) reactant plus said 1,3 bis(2-hydroxyethoxy)benzene and said other ester forming dihydroxy organic hydrocarbon reactant(s) is not over 90 mol percent of said A reactants.

4,398,018

TEMPERATURE STABLE THERMOTROPIC POLY(ESTER CARBONATE) DERIVED FROM T-BUTYLHYDROQUINONE

Murali K. Akkapeddi, Morris Plains; Bruce T. DeBona, Madison; Yu-Chin Lai, and Dusan C. Prevorsek, both of Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 21, 1981, Ser. No. 333,228

Int. Cl.³ C08G *63/64*

U.S. Cl. 528—176 **7 Claims**

1. In a thermotropic poly(ester carbonate) having diacyl moieties which are primarily terephthalate moieties, dihydroxy-derived moieties derived primarily from substituted hydroquinone and carbonate moieties, the improvement wherein the dihydroxy-derived moieties are at least about 40 mol percent t-butyl-benzene-2,5-dioxy, with the remaining substituted benzene-dioxy moieties being substituted by alkyl of 1–6 carbons, alkoxy of 1–6 carbons, phenyl or halo.

4,398,019

ANISOTROPIC MELT FORMING POLYESTERS AND POLYESTERAMIDES

Michael K. Cox, Stevenage, and Brian P. Griffin, St. Albans, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Oct. 28, 1981, Ser. No. 316,032

Claims priority, application United Kingdom, Nov. 7, 1980, 8035799

Int. Cl.³ C08G *63/54, 69/44*

U.S. Cl. 528—183 **5 Claims**

1. A polyester or polyesteramide capable of forming an anisotropic melt prepared by reacting together dicarboxylic acids, dihydric phenols, hydroxyaromatic acids, aminophenols and their polyester and polyesteramide forming derivatives characterised in that the reactants include (A) at least 10 mole % of the total reactants used to form the polyester or polyesteramide of reactants selected from the group comprising fumaric acid and alkyl substituted fumaric acids wherein the alkyl group contains from 1 to 4 carbon atoms, and (B) at least 10 mole % of aromatic ring compounds containing asymmetrically disposed substituents on the artomatic ring compound, the substituents being chosen from the group comprising halogen, phenyl an alkyl groups containing from 1 to 4 carbon atoms and wherein at least 30 mole % of the aromatic reactants used have their chain extending bonds disposed on the aromatic nuclei so that the chain extending bonds are either coaxial or parallel and oppositely directed.

4,398,020

PRODUCTION OF AROMATIC POLYKETONES

John B. Rose, Letchworth, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Apr. 12, 1982, Ser. No. 367,618

Claims priority, application United Kingdom, Apr. 29, 1981, 8113231

Int. Cl.³ C08G *67/00*

U.S. Cl. 528—207 **10 Claims**

1. A process for the production of an aromatic polyketone which comprises reacting at a temperature of from 40° to 200° C. in the presence of a fluoroalkane sulphonic acid the reactants selected from the group consisting of:

(a) a mixture of substantially equimolar amounts of

(i) at least one aromatic diacyl halide of formula

WOC—Ar—COW

where —Ar— is a divalent aromatic radical, W is halogen and COW is an aromatically bound acyl halide group, which diacyl halide is polymerisable with the at least one aromatic compound of (a)(ii), and

(ii) at least one aromatic compound of formula

H—Ar'—H

where —Ar'— is a divalent aromatic radical and H is an aromatically bound hydrogen atom, which compound is polymerisable with the at least one diacyl halide of (a)(i)

(b) at least one aromatic monoacyl halide of formula

H—Ar''—COW

where —Ar''— is a divalent aromatic radical and H is an aromatically bound hydrogen atom, W is halogen, and COW is an aromatically bound acyl halide group, which monoacyl halide is self-polymerisable, and

(c) a combination of (a) and (b).

4,398,021

SOLVENT RESISTANT, THERMOPLASTIC AROMATIC POLY(IMIDESULFONE) AND PROCESS FOR PREPARING SAME

Terry L. St. Clair, Poquoson, Va., and David A. Yamaki, Deptford, N.J., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 11, 1982, Ser. No. 407,240

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—222 **5 Claims**

1. A process for preparing thermoplastic poly(imidesulfone) comprising:

incorporating an aromatic sulfone moiety into the backbone of an aromatic linear polyimide by dissolving a quantity of a 3,3'4,4'-benzophenonetetracarboxylic dianhydride (BTDA) in a solution of 3,3'-diaminodiphenylsulfone and bis(2-methoxyethyl)ether, precipitating the reactant product in water, filtering and drying the recovered poly(amide-acid sulfone) and converting it to the poly(imidesulfone) by heating.

4,398,022

EXTRUSION BLOW MOLDABLE COPOLYESTERS

Bobby J. Sublett, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 2, 1980, Ser. No. 182,906

Int. Cl.³ C08G *63/16, 63/18*

U.S. Cl. 528—302 **12 Claims**

1. Copolyester derived from

(A) an acid component comprising about 10–90 mole % terephthalic acid and about 90–10 mole % 1,12-dodecanedioic acid, and

(B) a glycol component comprising at least 60 mole % 1,4-cyclohexanedimethanol,

said copolyester having an inherent viscosity of about 0.5 to about 1.8 as determined at 23° C. using 0.5 gram of polymer per 100 ml. of a solvent consisting of a 60/40 mixture of phenol/-tetrachloroethane, and said mole % being based on 100 mole % acid and 100 mole % glycol.

4,398,023

β-1,3-GLUCANPOLYOL, PROCESS FOR PREPARATION THEREOF, AND UTILIZATION THEREOF

Hideki Miyachi, Inazawa; Akira Misaki, Nishinomiya; Mariko Kakuta, Tanabeniskino; Mineo Nakayama, Hachioji, and Hideo Nagae, Kasugai, all of Japan, assignors to Meito Sangyo Kabushiki Kaisha, Nagoya, Japan

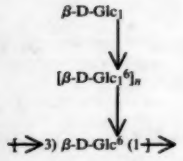
Filed Aug. 29, 1980, Ser. No. 182,617
Claims priority, application Japan, Aug. 29, 1979, 54-109015
Int. Cl.³ C08B 37/00
U.S. Cl. 536—1.1 1 Claim

1. β-1,3-glucanpolyol derived from β-1,3-glucan produced by a β-1,3-glucan-producing strain of the genus Pestalotia, said glucanpolyol having the following characteristics [I] and [II]:

[I] said glucanpolyol comprises a main chain having as repeating units β-1,3-glucopyranose units of the following formula

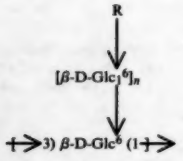
→3)β-D-Glc (1→

wherein Glc represents a glucopyranose residual moiety, and bonded thereto, either side chains of formula (B), or both side chains of formulas (A) and (B) below



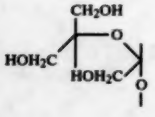
(A)

wherein n represents a number of from 0 to 1, and →3) β-D-Glc (1→ represents the above main chain,



(B)

wherein n and →3) β-D-Glc (1→ are the same as defined with respect to formula (A), and R represents a groups derived from β-D-glucopyranose of the formula



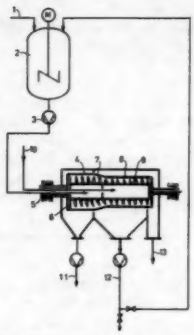
said glucanpolyol has an intrinsic viscosity of about 1 to about 10 and wherein, per 100 β-1,3-glucopyranose units of the main chain, the number of said side chains of formula (B) is about 25 to about 70, and the number of said side chains of formula (A) is 0 to about 45.

4,398,024

PROCESS FOR THE PURIFICATION OF CELLULOSE AND STARCH ETHERS

Claus-Rüdiger Bernert; Christian Kords, both of Walsrode, and Detmar Redeker, Cologne, all of Fed. Rep. of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode and Bayer Aktiengesellschaft, Leverkusen, both of, Fed. Rep. of Germany

Filed Nov. 13, 1981, Ser. No. 321,067
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043621
Int. Cl.³ B04B 1/20; C08B 11/20
U.S. Cl. 536—85 4 Claims



1. The process for the purification and isolation of a crude reaction product comprising a cellulose or starch ether suspension by removing the suspending agent, said process comprising introducing the cellulose or starch ether suspension into a solid jacket sieve worm centrifuge, separating off the suspending agent leaving a moist solid which is then conveyed to the filter zone of said centrifuge, uniformly contacting the moist solid with a purifying agent, separating the purifying agent from the solid by centrifuge and recovering purified cellulose or starch ether solid.

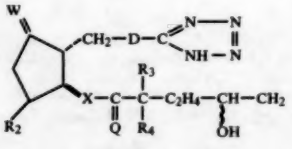
4,398,025

2-DECARBOXY-2-TETRAZOLYL-19-HYDROXY-PG COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 88,499, Oct. 26, 1979, abandoned, which is a division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104. This application Jan. 7, 1982, Ser. No. 337,649
Int. Cl.³ C07D 257/04
U.S. Cl. 542—429 1 Claim

1. A compound of the formula



wherein

D is

(1) cis—CH=CH—CH_2—$(CH_2)_6$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_6$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—,
(4) trans—$(CH_2)_3$—CH=CH—,
(5) —$(CH_2)_3$—$(CH_2)_6$—CH_2—,
(6) —$(CH_2)_3$—CH_2—CF_2—,

(7) $-(CH_2)_3-O-CH_2-$,
(8) $-(CH_2)_2-O-(CH_2)_2-$,
(9) $-CH_2-O-(CH_2)_3-$,
(10) $-(m-ph)-(CH_2)_2-$, or
(11) $-(m-ph)-O-CH_2-$
wherein m—ph is inter-meta-phenylene, and
wherein g is zero, one, two, or three;
wherein Q is α—OH:β—R_5 or α—R_5:α—OH,
wherein R_5 is hydrogen or methyl,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α—OH:β—H, or α—H:β—OH;
and wherein X is cis- or trans-CH=CH—, —C≡C—, or $-CH_2CH_2-$.

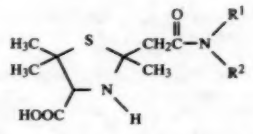
4,398,026

4-CARBOXY-2-ACETAMIDO THIAZOLIDINE DERIVATIVES

Seiichi Takano, Miyagi; Susumu Otomo, and Takehiro Amano, both of Saitama, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,526
Claims priority, application Japan, Jun. 4, 1981, 56-86180
Int. Cl.³ C07D 417/06, 277/06
U.S. Cl. 544—133 **8 Claims**

1. A thiazolidine derivative having the following general formula



wherein R^1 and R^2 are each lower alkyl having 1 to 3 carbon atoms, or R^1 and R^2 together with the nitrogen atom to which they are attached form a heterocyclic ring selected from the group consisting of morpholino, piperazino, piperidino and pyrrolidino, or said heterocyclic ring substituted with 1 or 2 methyl groups, and the pharmaceutically acceptable salts thereof.

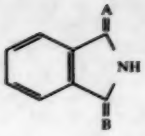
4,398,027

PREPARATION OF PIGMENTARY FORM ISOINDOLINE

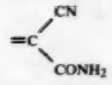
Wolfgang Lotsch, Beindersheim, and Peter Hilbert, Bobenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Continuation of Ser. No. 1272, Jan. 5, 1979, Pat. No. 4,271,301. This application Oct. 2, 1980, Ser. No. 193,017
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1978, 2800815
The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.
Int. Cl.³ C09B 57/04
U.S. Cl. 544—296 **10 Claims**

1. A process for the preparation of a brilliant, easily dispersible and low-hiding to extremely high-hiding pigmentary form of an isoindoline pigment of the formula



wherein A is



or is a substituted or unsubstituted barbituric acid radical, and B is a substituted or unsubstituted barbituric acid radical, which comprises

subjecting a suspension which consist essentially of the agglomerated crude pigment, in which the primary particles have a mean particle size of ≦0.1 μm to shearing forces in water in the presence of grinding media or in a kneader,

thereafter heating the resulting aqueous suspension at from 90 to 160 C in the presence or absence of a surfactant, for 1–30 hours and isolating the resulting pigment.

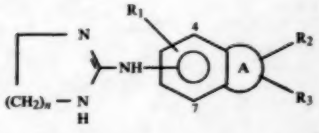
4,398,028

BICYCLIC HETEROCYCLIC AMINO DERIVATIVES

Peter Neumann, Berne, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 14,213, Feb. 22, 1979, Pat. No. 4,297,490, which is a continuation of Ser. No. 869,209, Jan. 13, 1978, abandoned. This application Jun. 24, 1981, Ser. No. 277,054
Int. Cl.³ C07D 239/20, 233/54
U.S. Cl. 544—331 **33 Claims**

1. A compound having the formula



wherein the heterocyclic amino moiety is bonded to the benzene ring of the bicyclic moiety,

n is an integer 1 or 2,

R_1, which is bonded to the benzene ring of the bicyclic moiety, is hydrogen, halo, C_{1-4}-alkyl, C_{1-4}alkylthio, C_{1-4}alkoxy, trifluoromethyl or hydroxy,

A is a five-membered heterocyclic ring selected from the group consisting of [b]pyrrole, [c]pyrrole, [d]triazole, [b]furan, [c]furan, [c]furazan, [d](1,2,3)-thiadiazole, [b]pyrroline, [c]pyrroline, [b]dihydrofuran, [c]dihydrofuran, [b]dihydrothiophene, [c]isoxazole and [d]isoxazole,

R_2, which is bonded to the A ring of the bicyclic moiety and attached to a carbon atom of said ring, is hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}alkylthio, trifluoromethyl or hydroxy, and

R_3, which is bonded to the A ring of the bicyclic moiety and attached to a nitrogen atom of said ring, is hydrogen or C_{1-4}alkyl, with the proviso that when A is [c]pyrrole, the nitrogen atom of said pyrrole ring is C_{1-4}alkylsubstituted,

said compound being in free base or in pharmaceutically acceptable acid addition salt form.

4,398,029

QUINOLINE CARBOXYLIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION

Tsutomu Irikura, Oizumigakuen; Hiroshi Koga, Omiya, and Satoshi Murayama, Nogi, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,168

Int. Cl.³ C07D *401/04;* **A61K** *31/47, 31/535;* **C07D** *413/04*

U.S. Cl. 544—363 **3 Claims**

1. 6,8-Difluoro-1-(2-fluoroethyl)-1,4-dihydro-4-oxo-7-(1-piperazinyl)quinoline-3-carboxylic acid, the hydrates, or the pharmaceutically acceptable salts thereof.

4,398,030

3-[(SUBSTITUTED-AMINO)(ARYL)METHYL]-1H-INDOLES

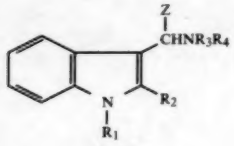
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 127,650, Mar. 6, 1980, Pat. 4,341,402. This application Jan. 22, 1982, Ser. No. 341,951

Int. Cl.³ C07D *209/14*

U.S. Cl. 548—506 **7 Claims**

1. A compound having the formula



wherein:

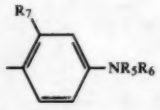
R_1 is hydrogen or lower-alkyl;

R_2 is hydrogen, lower-alkyl or phenyl;

R_3 is hydrogen or lower-alkyl;

R_4 is hydrogen, lower-alkyl, benzyl, di-lower-alkyl-amino-lower-alkyl, tri-lower-alkylammonium-lower-alkyl, phenyl, phenyl substituted with 1 or 2 halo, lower-alkyl or lower-alkoxy groups, or NR_3R_4 is pyrrolidino, piperidino, hexamethyleneimino or morpholino; and

Z is biphenylyl, naphthyl or a substituent having the formula



wherein:

R_5 and R_6 are independently lower-alkyl or benzyl and

R_7 is hydrogen, lower-alkyl, lower-alkoxy, halo or di-lower-alkylamino.

4,398,031

COUMARIN DERIVATIVES AND METHOD FOR SYNTHESIZING 5'-METHYL PSORALENS THEREFROM

Dean R. Bender, Hazlet, N.J.; John E. Hearst, and Henry Rapoport, both of Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

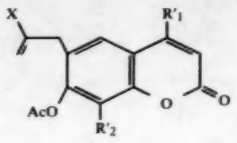
Continuation of Ser. No. 158,599, Jun. 11, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,271

Int. Cl.³ C07D *405/02*

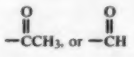
U.S. Cl. 549—282 **10 Claims**

1. A method for making a psoralen compound comprising the steps of:

prioviding a coumarin derivative of the structure



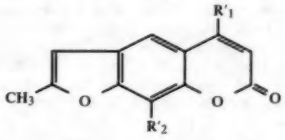
wherein R_1' is —H or —CH_3, R_2' is —CH_3, —OCH_3,



and X is a halogen;

treating said coumarin derivative with sulfuric acid, a concentration of said sulfuric acid being from about 70% to about 80%, the treating being at a temperature of from about 0° to about 25° C.; and

recovering a product compound from the treating step, said product compound being a 5'-methyl psoralen having the structure



4,398,032

PROCESS FOR THE PREPARATION OF 4-DIHALOMETHYL-3-OXABICYCLO[3.1.0]HEXAN-2-ONES

Petrus A. Kramer, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

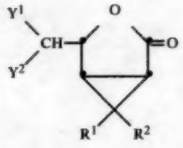
Division of Ser. No. 306,106, Sep. 28, 1981, Pat. No. 4,346,038. This application Jun. 7, 1982, Ser. No. 385,992

Claims priority, application United Kingdom, Oct. 22, 1980, 8034067

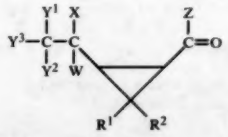
Int. Cl.³ C07D *307/93*

U.S. Cl. 549—302 **3 Claims**

1. A process for the preparation of a compound of the formula



which comprises reducing a compound of the formula



wherein each of Y^1 and Y^2 independently represents a fluorine, chlorine or bromine atom and each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having up to 10

carbon atoms, or R^1 and R^2 together represent an alkylene group having from 2 to 5 carbon atoms, Y^3 represents a chlorine or bromine atom, and Z represents a hydroxy group and either X represents a hydrogen atom and W represents a hydroxy group or X and W together represent an oxygen atom, or Z and X together represent an oxygen atom and W represents a hydroxy group, with a selective reducing agent which is a compound having one of the following formulae

$$M.BH_n(OR^3)_{4-n}Al(OR^3)_3M.AlH_m(OR^3)_{4-m}M_2S_2O_3$$

in which M represents an alkali metal, R^3 represents an alkyl group having 1 to 4 carbon atoms, n represents an integer 1 to 4, and m represents an integer 1 to 3.

4,398,033

4-CHLORO-4-CHLOROMETHYLOXETAN-2-ONE AND A PROCESS FOR ITS PRODUCTION

John G. Dingwall, Riehen, Switzerland, and Brian Tuck, Stockport, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,498

Claims priority, application United Kingdom, Mar. 17, 1981, 8108236

Int. Cl.³ C07D *305/12*

U.S. Cl. 549—329 **12 Claims**

1. A process for producing 4-chloro-4-chloromethyloxetan-2-one, comprising reacting diketene with sulphuryl chloride under conditions in which free radicals are formed.

4,398,034

PROCESS FOR THE PREPARATION OF LOW MOLECULAR WEIGHT POLYESTERS FROM HYDROXYPIVALDEHYDE

William L. Edmonson, and Anthony W. McCollum, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,795

Int. Cl.³ C07C *67/08, 67/03*

U.S. Cl. 560—1 **25 Claims**

1. A process for the preparation of low molecular weight polyesters which comprises reacting dry hydroxypivaldehyde with a diester, a diacid, a polyester, or a mixture thereof at a temperature of about 100° C. to about 230° C. in the presence of a transesterification catalyst.

4,398,035

MALONIC ACIDS AND ESTERS THEREOF

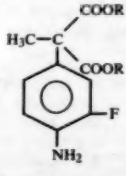
Jerry A. Walker, Oshtemo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Township, Kalamazoo County, Mich.

Division of Ser. No. 105,063, Dec. 19, 1979, Pat. No. 4,266,069. This application Oct. 3, 1980, Ser. No. 193,660

Int. Cl.³ C07C *55/08, 69/38*

U.S. Cl. 560—20 **4 Claims**

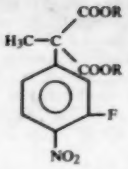
1. A compound having the formula



IIIa

wherein R is selected from the group consisting of hydrogen, alkyl of from 1 to 6 carbon atoms, inclusive, and the two R's taken together are dialkyl methylene to form a cyclic diester.

3. A compound having the formula



IIIa

wherein R is selected from the group consisting of hydrogen, alkyl of from 1 to 6 carbon atoms, inclusive, and the two R's taken together are dialkyl methylene to form a cyclic diester.

4,398,036

PREPARATION OF N-MONOSUBSTITUTED CARBAMATES

John J. McCoy, Media, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 2, 1980, Ser. No. 145,919

Int. Cl.³ C07C *125/065, 125/073*

U.S. Cl. 560—24 **22 Claims**

1. A process for the preparation of an N-monosubstituted carbamic acid ester which comprises reacting an aromatic primary amine having the formula $R(NH_2)n$ wherein R is a substituted or unsubstituted aryl or aralkyl group containing one or more benzenoid rings which may be fused or joined by single valency bonds and n is an integer of 1 to 6, with urea and at least a stoichiometric amount of a monohydric aliphatic alcohol, based on the aromatic amine and, having from 1 to 10 carbon atoms at a temperature in the range of from about 100° C. to 250° C. in the presence of a catalytic amount of a strongly basic aliphatic, cycloaliphatic, araliphatic or aromatic tertiary amine containing from 1 to 18 carbon atoms.

4,398,037

PROCESS FOR PRODUCING AROMATIC CARBOXYLIC ACIDS AND METHYL ESTERS THEREOF

Shinichi Takeda, Matsuyama; Masao Nonobe, Tokyo; Kenji Ishida, Matsuyama; Yorihiko Omoto, Kobe, and Tatsuro Anno, Tokyo, all of Japan, assignors to Hercofina, Wilmington, N.C.

Filed Nov. 9, 1981, Ser. No. 319,770

Int. Cl.³ C07C *67/08, 51/265*

U.S. Cl. 560—77 **9 Claims**

1. A process for producing an aromatic carboxylic acid or its methyl ester, which comprises oxidizing in the presence of a catalyst consisting essentially of at least one heavy metal compound selected from the group consisting of those compounds of cobalt, manganese, nickel and chromium, that are at least partly soluble in the oxidation reaction mixture, but in the substantial absence of (a) an aliphatic carboxylic acid as a solvent, and (b) a halogen or a halogen compound, at least one aromatic compound in the liquid phase, having at least one methyl or formyl group directly bonded to a nuclear carbon atom of the aromatic ring, to form an oxidation reaction mixture comprising the corresponding aromatic carboxylic acid, and, if desired, esterifying with methanol the oxidation reaction mixture, said oxidizing being carried out in the co-presence of a lithium compound at least partly soluble in the oxidation reaction mixture and at a concentration per mole of said catalyst of 0.1 mole to 10 moles.

4,398,038

OXOALKYL ESTERS

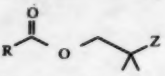
Michael Licciardello, Farmingdale; Richard M. Boden, Monmouth Beach; Hugh Watkins, Lincroft, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 307,366, Oct. 1, 1981, Pat. No. 4,368,145. This application Jul. 8, 1982, Ser. No. 396,290

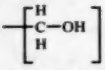
Int. Cl.³ C07C *69/76*

U.S. Cl. 560—103 **5 Claims**

1. An oxoalkyl ester defined according to the structure:



wherein Z is a moiety selected from the group consisting of carbinol having the structure:



and carboxyaldehyde having the structure:

and R is selected from the group consisting of 3-heptanyl and phenyl.

4,398,039

HYDROGENATION OF CARBOXYLIC ACIDS

Frederick A. Pesa, Aurora; Anne M. Graham, Northfield, and Wayne R. Kliewer, North Randall, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed May 18, 1981, Ser. No. 264,755

Int. Cl.³ C07C *67/00, 67/08, 69/24*

U.S. Cl. 560—265 **6 Claims**

1. A process for the production of carboxylic acid esters having from 2 to 20 carbon atoms from aliphatic carboxylic acids having from 1 to 10 carbon atoms, including contacting said carboxylic acids with hydrogen in the vapor phase in the absence of water in excess of the amount of water vapor formed in situ, at a reaction temperature from about 150° C. to about 450° C. and a reaction pressure of about 250 psig to about 5000 psig in the presence of a catalyst represented by the formula

$$Zn_aRu_bD_cE_dO_x$$

wherein

D=Co, Ni and mixtures thereof;

E=Cd, Fe, Cu,, Rh, Pd, Os, Ir, Pt and mixtures thereof;

and wherein

a=greater than 0 to 1,

b=0.01 to 3,

c=0.01 to 3,

d=0 to 1,

x=the number of oxygens determined by the valence requirements of the other elements.

4,398,040

PROCESS FOR PRODUCING TRIMELLITIC ACID

Takashi Suzuki; Koichi Kitahara; Susumu Naito, and Tomoji Tsuji, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 210,860, Nov. 26, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 388,234

Claims priority, application Japan, Nov. 28, 1979, 54-153814

Int. Cl.³ C07C *51/16*

U.S. Cl. 562—413 **14 Claims**

1. A process for producing trimellitic acid by liquid phase air oxidation of pseudocumene in an acetic acid reaction medium in the presence of a catalyst consisting of of catalytic forms of cobalt, manganese and bromine, which comprises conducting the reaction at two stages comprising a first stage of reaction at a temperature of 110° to 170° C. and a second stage of reaction at a temperature of 180° to 240° C., while maintaining a reaction pressure under a condition of the following formula throughout the reaction:

$$1.20P_{solv} \leqq P \leqq 2.20P_{solv}$$

wherein P represents a reaction pressure as absolute pressure and Psolv represents a total vapor pressure of acetic acid and water present in the reaction system at a given reaction temperature and the first stage of reaction at a lower temperature is continued until the amount of unreacted pseudocumene in the reaction solution becomes 10% or less on the basis of charged pseudocumene.

4,398,041

PROCESS FOR MANUFACTURING ALKYLAMINES

Robert N. Cochran, West Chester, and Michel Deeba, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 29, 1982, Ser. No. 344,246

Int. Cl.³ C07C *85/06*

U.S. Cl. 564—479 **5 Claims**

1. A process for converting a C_1–C_4 alcohol to a predetermined nonequilibrium controlled distribution of monosubstituted, disubstituted and trisubstituted alkylamines which comprises

(a) passing a mixture of the C_1–C_4 alcohol and ammonia into a first conversion zone containing a shape selective crystalline aluminosilicate zeolite catalyst which has intracrystalline pores of a diameter that pass the monosubstituted and disubstituted alkylamine products but are too small to pass the trisubstituted alkylamine product,

(b) substantially completely converting the alcohol under conversion conditions in the first conversion zone to yield a product stream comprising the monosubstituted and disubstituted alkylamines while substantially suppressing the production of the trisubstituted alkylamine,

(c) removing a predetermined fraction of the first product stream,

(d) passing the remainder of the first product stream into a second conversion zone containing a catalyst which has intracrystalline pores sufficiently large to readily permit the production of an equilibrium controlled distribution of monosubstituted, disubstituted and trisubstituted alkylamine,

(e) converting the monosubstituted and disubstituted alkylamines of the first product stream under conversion conditions in the second conversion zone to yield a second product stream comprising an equilibrium controlled distribution of monosubstituted, disubstituted and trisubstituted alkylamines, and

(f) combining the fraction of the first product steam from step (c) with the second product stream to yield a nonequilibrium controlled monosubstituted, disubstituted and trisubstituted alkylamine distribution.

4,398,042

PROCESS FOR THE PRODUCTION OF 3-MERCAPTO-PROPANEDIOL-(1,2)

Axel Kleemann; Robert Nygren, and Rüdolf Wagner, all of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,608

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014165

Int. Cl.³ C07C *148/00*

U.S. Cl. 568—62 **24 Claims**

1. In a process for the production of 3-mercapto-propanediol-1,2 by the reaction of hydrogen sulfide with glycidol in the presence of a catalyst, the improvement comprising reacting liquid hydrogen sulfide with glycidol under pressure sufficient to keep the hydrogen sulfide in liquid form and wherein the reaction is carried out in heterogeneous phase with montmorillonite or hydroxysodalite as a solid catalyst at 30°–150° C.

4,398,043

PROCESS FOR PREPARING CYCLOPENTENOLONES

Kenji Saito, Toyonaka; Yukihisa Takisawa, and Hiroshi Yamachika, both of Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

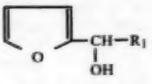
Filed Nov. 23, 1981, Ser. No. 324,135

Claims priority, application Japan, Dec. 10, 1980, 55-175144; Dec. 16, 1980, 55-178326

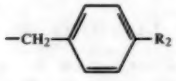
Int. Cl.³ C07C *45/59*

U.S. Cl. 568—322 **4 Claims**

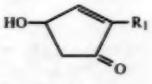
1. A one step process for preparing cyclopentenolones consisting essentially of treating a furan-carbinol of the formula:



wherein R_1 is a straight, branched or cyclic alkyl group having not more than 6 carbon atoms, a straight, branched or cyclic alkenyl group having not more than 6 carbon atoms, a straight or branched alkynyl group having not more than 6 carbon atoms or a group of the formula:



wherein R_2 is a hydrogen atom, a methyl group or a halogen atom in an aqueous medium in the presence or absence of a catalyst to obtain the corresponding cyclopentenolone of the formula:



wherein R_1 is as defined above.

4,398,044

SYNTHESIS OF ACETYL-T-ALKANES

Riaz F. Abdulla, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 8, 1982, Ser. No. 366,881

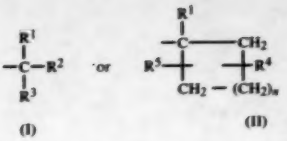
Int. Cl.³ C07C *45/65*

U.S. Cl. 568—318 **18 Claims**

1. a process for preparing an acetyl-t-alkane of the formula

wherein

R is of the formula



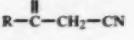
(I) (II)

R^1 is C_1–C_4 alkyl;

R^2 and R^3 are independently C_1–C_{13} alkyl, or halo-C_1–C_{13} alkyl;

n is 0–4;

R^4 and R^5 are independently hydrogen, halo or C_1–C_4 alkyl; comprising hydrolytically decarboxylating a t-alkanoylacetonitrile of the formula



with hydrochloric acid.

4,398,045

POLYETHYLENE GLYCOL DERIVATIVES, THEIR USE AND COSMETIC AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Henri Sebag, Pa. is, France, assignor to L'Oreal, Paris, France

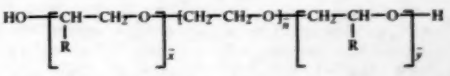
Filed Oct. 8, 1981, Ser. No. 309,811

Claims priority, application France, Oct. 10, 1980, 80 21776

Int. Cl.³ C07C *43/11, 43/10*

U.S. Cl. 568—624 **7 Claims**

1. A product having the formula



wherein each R represents, independently, alkyl having 8–18 carbon atoms, alkoxymethyl wherein the alkoxy moiety has 8–20 carbon atoms or alkenyloxy methyl wherein the alkenyl moiety has 8–20 carbon atoms, or a mixture thereof, n represents an average number from 20 to 500 and x and y independently represent an average number from 0 to 8 such that the sum (x+y) is from 1 to 8.

4,398,046

GLYCOL PURIFICATION WITH MINIMAL PH DROP

Michael R. Rosene, Pittsburgh, Pa., assignor to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed Apr. 7, 1982, Ser. No. 366,439

Int. Cl.³ B01D *15/00*

U.S. Cl. 568—679 **7 Claims**

1. In the purification of contaminated glycol scrubbing solutions used in a liquid-liquid extraction process for the manufacture of petrochemicals by passage of said glycol solutions through an activated carbon filter, the improvement comprising minimizing glycol pH reduction by: employing a magnesite containing activated carbon.

4,398,047

2-SUBSTITUTED-4,6-DI-T-BUTYLRESORCINOL

Yukihisa Takisawa, Ibaraki, and Shinichi Hasegawa, Otsu, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

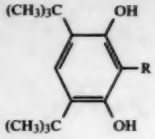
Division of Ser. No. 201,746, Oct. 29, 1980, Pat. No. 4,337,370. This application Feb. 23, 1982, Ser. No. 351,449

Claims priority, application Japan, Nov. 8, 1979, 54-145060; Dec. 10, 1979, 54-160180

Int. Cl.³ C07C *39/08*

U.S. Cl. 568—766 **1 Claim**

1. 2-Substituted-4-,6-di-t-butylresorcinol represented by the general formula:



wherein R represents a straight or branched alkyl group having 1 to 20 carbon atoms, a straight or branched alkenyl group having 2 to 20 carbon atoms and at least one double bond, or an aralkyl group, wherein no tertiary carbon atoms of R is bonded directly to the benzene nucleus.

4,398,048

PREPARATION OF 2,4,6-TRIALKYLPHENOLS

Bruce E. Firth, Elk Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 21, 1981, Ser. No. 313,899

Int. Cl.³ C07C *37/14, 37/48*

U.S. Cl. 568—781 **22 Claims**

1. A method of making a 2,4,6-trialkylphenol comprising reacting a feed mixture of a 2,6-dialkylphenol and phenol with an olefin over a bed of solid catalyst selected from the group consisting of alumina, fluorided alumina, chlorided alumina, and silica-alumina under alkylating conditions, separating the unreacted 2,6-dialkylphenol from the formed 2,4,6-trialkylphenol, and recovering each of said alkylated phenols.

4,398,049

OLIGOMERIZATION CATALYST AND PROCESS

Dominique Le Pennec, Trappes; Dominique Commereuc, Meudon, and Yves Chauvin, Le Pecq, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 248,582, Mar. 27, 1981, Pat. No. 4,366,067, which is a continuation-in-part of Ser. No. 183,792, Sep. 3, 1980, Pat. No. 4,316,851. This application Sep. 28, 1982, Ser. No. 425,347

Claims priority, application France, Sep. 3, 1979, 79 22153

Int. Cl.³ C07C *3/12, 3/18, 3/21*

U.S. Cl. 585—512 **11 Claims**

1. A process of oligomerizing C_{1-5} monoolefins, comprising contacting the olefins with a catalyst composition consisting essentially of at least one hydrocarbyl aluminum halide and at least one nickel compound having the formula $(R_1COO)\ (R_2COO)Ni$, wherein R_1 is a hydroxy- substituted or unsubstituted C_{5-20} hydrocarbyl radical; and R_2 is a haloalkyl group having the formula $C_mH_pX_q$, wherein m is 1,2 or 3 p is zero or an integer; q is an integer; and $p + q = 2m + 1$; the molar ratio of the hydrocarbyl aluminum halide to the nickel compound being from 1:1 to 50:1, said contacting being effected at a temperature of −20° C to 80° C and a pressure sufficient to maintain the olefins in the liquid or condensed phase, at least in major part.

4,398,050

PROCESS FOR THE PRODUCTION OF OLEFINS FROM SYNTHESIS GAS

Carl-Ernst Hofstadt, Munich; Michael Schneider, Ottobrunn-Riemerling, and Karel Kochloefl, Moosburg, all of Fed. Rep. of Germany, assignors to Süd Chemie, A.G., Munich, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,477

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005550

Int. Cl.³ C07C *1/04*

U.S. Cl. 585—640 **21 Claims**

1. A process for production of C_2 and C_3 olefins from synthesis gas, which comprises:

A. forming a mixture of methanol and higher alcohols especially rich in C_2 and C_3 alcohols in a first synthesis stage, which comprises the steps of:

1. passing a synthesis gas mixture of carbon oxides and hydrogen at a temperature in the range of about 250° C. to 400° C. and at a pressure in the range of from about 80–150 bar, over a catalyst comprising:
   a. a major portion by weight of the oxides of copper and zinc, and a minor portion by weight of aluminum oxide, all in intimate association with each other,
   b. a promotional amount of a promoting compound selected from the group consisting of chromium, cerium, lanthanum, and manganese, and
   c. a compound of potassium in a weight concentration of from 0.03–3.4% (calculated as K_2O) based on the weight of the total catalyst;

B. separating the mixture of alcohols from the gas phase materials:

C. separating the methanol and higher alcohols into a methanol fraction and a higher alcohol fraction rich in C_2 and C_3 alcohols;

D. converting the higher alcohol fraction into olefins rich in C_2 and C_3 olefins in a dehydration stage, which comprises the steps of:

1. passing said higher alcohol fraction over an alkalized dehydration catalyst at a low pressure and at a temperature in the range of from 350° C. to 500° C. and at a space velocity in the range of from 1–7 volumes of gas per volume of catalyst per hour, and
2. separating the olefins from the non-olefinic materials.

4,398,051

PRODUCTION OF TERTIARY OLEFINS

Masashi Araki; Takuo Hibi, both of Ichihara; Tomofumi Kawabe, and Takeshi Yamahara, both of Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 16, 1981, Ser. No. 312,344

Claims priority, application Japan, Oct. 28, 1980, 55-151661; Feb. 27, 1981, 56-29147

Int. Cl.³ C07C *1/00*

U.S. Cl. 585—640 **12 Claims**

1. In a method of producing a tertiary olefin using an alkyl tert-alkyl ether as raw material, the improvement wherein the method is conducted in the presence of a catalyst produced by supporting at least on part by weight of an aluminum compound on 100 parts by weight of a carrier containing silicon oxides and calcining the resultant produce at a temperature above the temperature at which said aluminum compound decomposes.

4,398,052

SEPARATION OF MONOOLEFINS FROM OTHER MONOOLEFINS

Donald C. Tabler, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 14, 1980, Ser. No. 140,282

Int. Cl.³ C07C *7/148*

U.S. Cl. 585—845 **11 Claims**

1. A process for at least partially separating a first monoolefin from admixture with a second monoolefin, wherein said first monoolefin forms a stronger complex than said second monoolefin with a complexing agent selected from the group consisting of copper (I) salts of sulfonic acids and copper (I) salts of dialkyl phosphates, said process comprising the steps of:

contacting the mixture of said first monoolefin and said second monoolefin with said complexing agent and a suitable hydrocarbon solvent for said complexing agent under such conditions that said first monoolefin forms a stronger complex than said second monoolefin with said complexing agent; and

separating said first monoolefin from said second monoolefin based on the relative strengths of the first monoolefin complex and the second monoolefin complex.

4,398,053

PYRAMIDAL ENERGY COLLECTOR

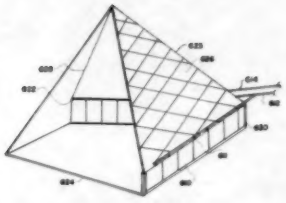
Alfred G. Orillion, 1201-E Cleermont Cir., Huntsville, Ala. 35801

Continuation-in-part of Ser. No. 972,893, Dec. 26, 1978, Pat. No. 4,249,520, which is a continuation-in-part of Ser. No. 800,745, May 26, 1977, Pat. No. 4,132,221. This application Feb. 9, 1981, Ser. No. 233,040

The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.

Int. Cl.³ H01L *31/04;* F24J *3/02*

U.S. Cl. 136—248 8 Claims



1. An energy collector comprising:

a base and a generally pyramidal-shaped structure extending around and upward from said base;

an opaque wall region of said pyramidal shaped structure extending approximately one-half way around said base, and said wall region extending upward linearly at an angle of less than 90° with respect to said base;

said base and said wall region each having a radiant energy reflective inner surface, and approximately the remainder of said pyramidal shaped structure being radiant energy transmissive; and

an energy absorber comprising photovoltaic cells extending around and forming a lower portion of said wall region, said photovoltaic cells being positioned and configured to:

directly receive a portion of the radiation passing through the transmissive remainder of said structure,

receive some radiation via a path through said transmissive remainder onto said reflective inner surface of said pyramidal structure and then reflected onto said photovoltaic cells,

receive some radiation via a path through said transmissive remainder of said structure onto said reflective inner surface of said base and then reflected onto said photovoltaic cells, and

to receive some radiation via a path through said transmissive remainder of said pyramidal-shaped structure that includes both said reflective inner surface of said base and said reflective inner surface of said pyramidal-shaped structure;

whereby a substantial amount of all of the radiant energy passing through said transmissive remainder of said structure is captured by said photovoltaic cells, thereby, providing enhanced levels of radiation to said cells.

4,398,054

COMPENSATED AMORPHOUS SILICON SOLAR CELL INCORPORATING AN INSULATING LAYER

Arun Madan, Moraga, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 12, 1982, Ser. No. 367,812

Int. Cl.³ H01L *31/06, 31/18*

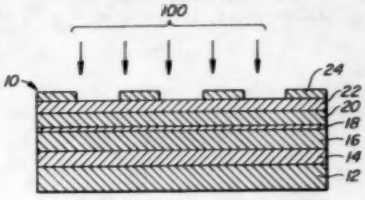
U.S. Cl. 136—255 15 Claims

1. A solar cell comprising:

an electrically conductive substrate;

a layer of P-type conductivity hydrogenated amorphous silicon electrically contacting said substrate;

a layer of photoactive compensated intrinsic hydrogenated amorphous silicon contacting said P-type layer, said layer having a bandgap energy less than about 1.6 eV and incorporating N-type and P-type dopants in an amount sufficient to reduce the bandgap of the layer while maintaining a recombination lifetime which is greater than the transit time of holes and electrons out of said layer during the illumination of said layer by solar radiation;



a layer of electrically insulating material contiguous to and deposited on said photoactive layer of compensated hydrogenated amorphous silicon;

a layer of N-type conductivity hydrogenated amorphous silicon contacting said insulating layer; and

means for electrically contacting said N-type layer.

4,398,055

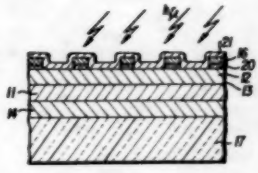
RADIANT ENERGY CONVERTER HAVING SPUTTERED $CDSIAS_2$ ABSORBER

Lubna R. Ijaz, and Larry C. Burton, both of P.O. Box 158, Christiansburg, Va. 24073

Filed Aug. 21, 1981, Ser. No. 295,072

Int. Cl.³ H01L *31/06, 31/18;* C23C *15/00*

U.S. Cl. 136—258 13 Claims



1. In the manufacture of a radiant energy conversion cell the improvement comprising,

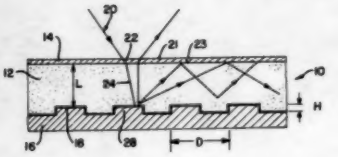
forming a polycrystalline layer with large grain size by stoichiometrically sputtering $CdSiAs_2$ on a substrate using separate targets respectively comprising Cd, Si, and $CdAs_2$, each said target having an ambient temperature of about 90° C. to about 100° C. with sputter bias voltages between about 0 to 1000 volts, said substrate having a closely controlled ambient temperature, the power for sputtering and temperature being limited to avoid evaporation of arsenic.

2. In a radiant energy converter including a thin film absorber layer formed as a p-type semiconductor material and a thin film collector layer of an n-type semiconductor material in contact with and forming a heterojunction with said absorber layer, and electrode means on the non-contacting surfaces of said layers, the improvement wherein said absorber layer is a polycrystalline material formed by a controlled sputtering process to have large grain size to reduce grain boundary recombinations of photogenerated electrons and wherein said absorber is stoichiometric $CdSiAs_2$.

4,398,056
SOLAR CELL WITH REFLECTING GRATING SUBSTRATE

Ping Sheng, Westfield, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 23, 1981, Ser. No. 285,953
Int. Cl.³ H01L 31/04
U.S. Cl. 136—259 9 Claims



1. A solar cell comprising:

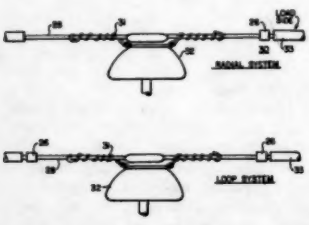
(a) a rectangular diffraction grating coated with a layer of reflecting material on its grating surface; and

(b) an active layer of semiconductor material formed on said layer of reflecting material; wherein said diffraction grating has a groove periodicity and depth such that enhancement of absorption of incident light within a desired wavelength range is optimized with respect to the index of refraction and the thickness of the active material and dielectric constant of said reflecting material.

4,398,057
ARC PROTECTION ARRANGEMENT FOR COVERED OVERHEAD POWER DISTRIBUTION LINES

Derrill F. Shankle, Whitewall Borough, and Jeffrey L. Maitlen, Forest Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1981, Ser. No. 248,789
Int. Cl.³ H02H 1/04; H02G 7/00
U.S. Cl. 174—2 4 Claims



1. An arrangement for protecting an overhead power distribution line having an insulation cover against damage from fault current arcing, said arrangement comprising a portion of the line having a section of its insulation cover removed to form an insulation cover end face and to expose a section of the line conductor for interconnection or support, and a conductive arc protection clamp device secured in conductive contact with said conductor section and having substantial heat sink mass to provide sufficient arc energy absorption for line conductor protection, said clamp device having at least a portion thereof substantially surrounding and shielding said conductor section to function as an arc terminus.

4,398,058
MOISTURE-PROOFING ELECTRICAL CABLE

Dieter Gerth; Friedrich Schatz, and Cornelius van Hove, all of Langenhagen, Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,143
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011868
Int. Cl.³ H01B 7/18, 9/02
U.S. Cl. 174—106 D 8 Claims

1. A moisture-proof cable, comprising:

a plurality of inner conductors assembled in a stranded bundle;

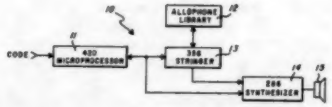
an insulating jacket assembly around the conductor bundle and constituting therewith a cable core; and

a twin tube comprised of two thin metal strips, a first one having been longitudinally folded around the core and seam-welded along edges of the first strip, a second one of the strips having been longitudinally folded around the first one and seam-welded along its edges, the first one having a higher electrical conductivity but a lower mechanical resistance than the second, outer one, the twin tube having corrugations commonly made in situ and which extend into the jacket in order to obtain longitudinal sealing against the migration of moisture.

4,398,059
SPEECH PRODUCING SYSTEM

Kun-Shan Lin; Kathleen M. Goudie, and Gene A. Frantz, all of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 5, 1981, Ser. No. 240,693
Int. Cl.³ G10L 1/00
U.S. Cl. 179—1 SM 31 Claims



1. An electronic speech-producing system for receiving allophonic code signals representative of allophonic units of speech and for producing audible speech-like sounds corresponding to the allophonic code signals, said speech-producing system comprising:

allophone library means in which digital signals representative of allophone-defining speech parameters identifying the respective allophone subset variants of each of the recognized phonemes in a given spoken language as modified by the speech environment in which the particular phoneme occurs are stored, said allophone library means being responsive to the allophonic code signals for providing digital signals representative of the particular allophone-defining speech parameters corresponding to said allophonic code signals;

means operably associated with said allophone library means for concatenating the digital signals in a manner designating stress and intonation patterns;

speech synthesizing means operably coupled to said concatenating means for receiving the digital signals representative of allophone-defining speech parameters and providing analog signals representative of synthesized speech corresponding to the digital signals received thereby; and

audio output means operably connected to the output of said speech synthesizer means for receiving said analog signals representative of synthesized speech therefrom to produce audible synthesized speech-like sounds having stress and intonation incorporated therein.

4,398,060

MUTING CIRCUIT FOR AN FM RADIO RECEIVER

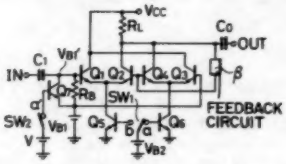
Masanori Ienaka, Kodaira, and Yoshimi Iso, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

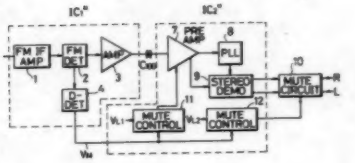
Filed Aug. 6, 1981, Ser. No. 290,564

Claims priority, application Japan, Sep. 17, 1980, 55-127982; Sep. 17, 1980, 55-127983

Int. Cl.³ H04H *5/00*

U.S. Cl. 179—1 GD **7 Claims**





1. A muting circuit comprising:

(1) first and second transistors having the emitters thereof connected to each other;

(2) third and fourth transistors having the emitters thereof connected to each other;

(3) a first constant current source connected commonly to the emitters of said first and second transistors;

(4) a second constant current source connected commonly to the emitters of said third and fourth transistors;

(5) a coupling capacitor for feeding an input signal to the base of said first transistor;

(6) a bias resistor having one end thereof connected to the base of said first transistor and the other to the base of said third transistor;

(7) bias voltage generation means connected to the base of said third transitor and to said other end of said bias resistor;

(8) load means connected to the collector of said second transistor and to the collector of said fourth transistor;

(9) a feedback circuit connected between said load means and both bases of said second and fourth transistors;

(10) means for alternatively controlling and bringing either one of said first and second constant current sources into the operative state and the other into the inoperative state; and

(11) a switching element connected between said one end and said other end of said bias resistor and actuated into the ON state for a predetermined period after making of the power source.

4. An FM radio receiver comprising:

(1) an FM intermediate frequency amplification stage;

(2) an FM detector having the input terminal thereof connected to the output terminal of said FM intermediate frequency amplification stage;

(3) a detuning detection circuit responsive to the intermediate frequency signal of said FM intermediate frequency amplification stage;

(4) a pre-amplifier having the input terminal thereof connected to the output terminal of said FM detector, the signal transmitting operation of said pre-amplifier being virtually inhibited when a control input signal is applied to the control input terminal of said pre-amplifier;

(5) a phase locked loop circuit for obtaining a 38 KHz switching signal in synchronism with a 19 KHz pilot signal contained in a stereo composite signal obtained from said FM detector;

(6) a stereo demodulation circuit for providing right and left channel demodulation output signals when applied with said stereo composite signal and said 38 KHz switching signal;

(7) a muting circuit having first and second input terminals, first and second output terminals and a control input terminal, said first and second input terminals receiving said right and left channel demodulation output signals, respectively, and said control input terminal receiving the control input signal, thereby virtually inhibiting the signal transmitting operation between said first input terminal and said first output terminal and the signal transmitting operation between said second input terminal and said second output terminal, respectively;

(8) a first mute control circuit receiving at the input terminal thereof the output signal of said detuning detection circuit and applying the output signal thereof to said control input terminal of said pre-amplifier, said first mute control circuit further having a first discrimination level with respect to the output signal of said detuning detection signal to be applied to the input terminal thereof; and

(9) a second mute control circuit receiving at the input terminal thereof the output signal of said detuning detection circuit and applying the output signal thereof to the control input terminal of said muting circuit, said second mute control circuit further having a second discrimination level with respect to the output signal of said detuning detection circuit to be applied to the input terminal thereof;

whereby a level difference is set between said first discrimination level and said second discrimination level so that when the reception condition of said FM radio receiver changes from the tuning state to the detuning state, the signal transmitting operation of said muting circuit is virtually inhibited and thereafter the signal transmitting operation of said pre-amplifier is virtually inhibited.

4,398,061

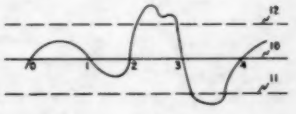
AUDIO PROCESSING APPARATUS AND METHOD

Renville H. McMann, Jr., New Canaan, Conn., assignor to Thomson-CSF Broadcast, Inc., Stamford, Conn.

Filed Sep. 22, 1981, Ser. No. 304,839

Int. Cl.³ H04B *15/00*

U.S. Cl. 179—1 VL **31 Claims**



1. Apparatus for processing an input electronic audio signal, comprising:

zero-crossing detector means for detecting when said input signal crosses a predetermined zero reference level;

peak detector means for detecting the peak of said input signal during a time interval defined by successive zero crossings;

means responsive to the detected peak of said input signal during said interval for generating an amplitude control signal as a function of said peak;

delay means responsive to said input signal for generating a time delayed version of said input signal;

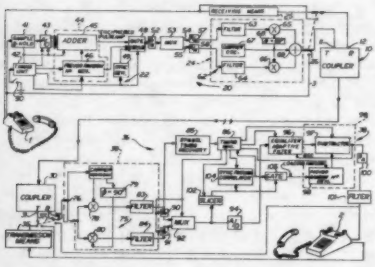
amplitude control means responsive to the time delayed version of said input signal and to said amplitude control signal for applying amplitude control to said time delayed version of said input signal during said time interval as it occurs in the time delayed version of said input signal.

4,398,062

APPARATUS FOR PRIVACY TRANSMISSION IN SYSTEM HAVING BANDWIDTH CONSTRAINT

Daniel D. McRae; Frank A. Perkins, both of West Melbourne, and Edward B. Glover, Melbourne Beach, all of Fla., assignors to Harris Corporation, Cleveland, Ohio

Continuation of Ser. No. 741,147, Nov. 11, 1976, abandoned.
This application Feb. 20, 1981, Ser. No. 236,553
Int. Cl.[3] H04M *1/70;* H04B *1/00*
U.S. Cl. 179—1.5 E **41 Claims**



30. A method of filtering a received signal including symbols transmitted in discrete time intervals occurring at a first rate comprising sampling said received signal and weighting and combining the resulting samples to thus provide a filtered signal and adjusting the weights of the samples, the improvement wherein;

the step of sampling said received signal includes the step of sampling at a rate greater than said first rate and

said weighting step includes the step of beginning adjustment of said weighting within a predetermined time after the arrival of said received signal regardless of the initial timing relationship between said sampling and said discrete time intervals.

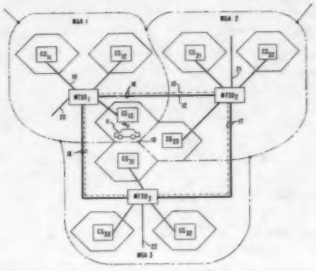
4,398,063

MOBILE TELEPHONE INTEROFFICE HANDOFF LIMITING METHOD AND APPARATUS

Ronald J. Hass, 2S 513 Cree Ct., Wheaton, Ill. 60187, and Charles F. Hunnicutt, 35W 785 Park La., Saint Charles, Ill. 60174

Filed Oct. 24, 1980, Ser. No. 200,415
Int. Cl.[3] H04B *7/15, 7/04*
U.S. Cl. 179—2 EB **9 Claims**

1. A cellular mobile radiotelephone system including plural mobile telecommunication switching offices ($MTSO_1$–$MTSO_3$), each controlling a different set of cell antenna sites (CS) provided for radio communication with at least one radiotelephone unit (**11**) that is movable amoung cells of the system, trunk paths (**16–18**) connected between different pairs of said MTSOs, and an extended call connection including an MTSO for serving said mobile unit through a cell site and including at least a tandem MTSO coupled through said serving MTSO to such mobile unit, the system being characterized in that



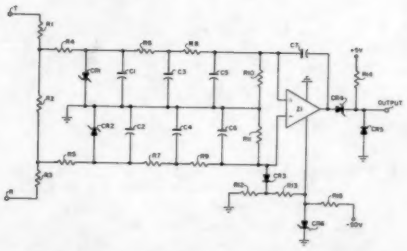
each MTSO includes means (FIG. **5**) for preventing an additional inclusion of one MTSO in said call connection in which that one MTSO is already included as a tandem MTSO.

4,398,064

CALL-FOR-SERVICE AND CONTINUITY SENSOR CIRCUIT

Edward A. Formosa, Jr., Elmhurst, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 28, 1981, Ser. No. 335,004
Int. Cl.[3] H04M *7/14;* H04Q *3/62*
U.S. Cl. 179—18 AH **9 Claims**



1. A call-for-service and continuity sensor circuit for use in a trunk circuit of a telephone switching system including at least first and second switching centers connected via said trunk circuit in ground start configuration, said trunk circuit having first and second leads connecting said switching centers, said call-for-service and continuity sensor circuit comprising:

circuit input means including signal conditioning means connected to said first and said second leads of said trunk circuit;

circuit sensing means including comparator means connected via included inputs to said signal conditioning means;

said input means cooperating with said signal conditioning means to adapt signals sensed on said trunk circuit leads for use by said comparator means while protecting said trunk circuit from excessive loading and protecting said comparator means from excessive induced potentials; and

circuit output means connected to an output of said comparator means and having an output connected to said second switching center, said circuit output means operated to convert signals from said comparator means to signals suitable for use by said second switching center and to couple said suitable signals to said second switching center via an output terminal;

whereby, in response to the application of negative potential to said second lead and an open circuit to said first lead at said first switching center, said sensor is operated to produce a first output signal to said second switching center, and in response to the application of negative potential to said second lead and earth ground to said first lead at said first switching center, said sensor is further operated to produce a second output signal, and in response to the application of an open circuit to both of said leads at said first switching center, said sensor is still further operated to produce said second signal.

4,398,065

CIRCUIT ARRANGEMENT FOR DETERMINING THE ZONE OF ORIGIN OF A TELEPHONE CONNECTION

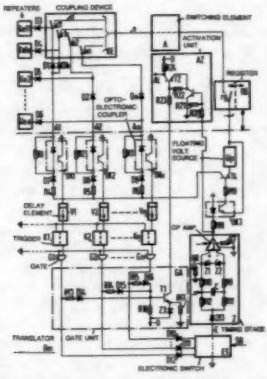
Karl Wagner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 319,265, Nov. 9, 1981, abandoned, which is a continuation of Ser. No. 127,813, Mar. 6, 1980, abandoned. This application Jan. 22, 1982, Ser. No. 341,655

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911150

Int. Cl.³ H04Q *1/22*

U.S. Cl. 179—18 FG **4 Claims**



1. In a telecommunications system of the type in which a plurality of repeaters are permanently assigned to respective zones of origin and operate to seize a register by way of respective switches of a coupling device and a selection switching device which selects a free register, and in which a control path extends from each switch through the selection switching device and through the register, the seized register causing the emission of a switch-through command, the improvement in combination therewith comprising:

test signal producing means connected to the control path and connected to receive and operate in response to the switch-through command to apply a test signal to the control path;

a plurality of opto-electronic switching elements each connected to a respective switch on the repeater side thereof and operated to indicate the zone of origin assigned to the respective repeater in response to a test signal and to produce a corresponding electrical signal;

a plurality of delay circuits each connected to a respective opto-electronic switching element for delaying the respective electrical signal by a respective predetermined time which is matched to the duration of expected interference pulses;

a plurality of trigger circuits each connected to a respective delay circuit and operated by a respective delayed electrical pulse to produce an output signal;

first gating means connected between said plurality of trigger circuits and said test signal producing means for gating through an output signal to terminate the test signal;

said test signal producing means including timing means for causing transmission of the test signal for an interval which exceeds the maximum predetermined delay time;

second gating means connected to said plurality of trigger circuits and operated in response to multiple output signals to produce a further output signal; and

recording means connected to said second gating means for recording the further output signal.

4,398,066

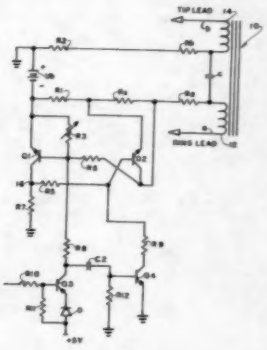
AUTOMATIC POWER DENIAL CIRCUIT FOR A SUBSCRIBER LINE INTERFACE CIRCUIT

Howard Sinberg, Coral Springs, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Aug. 19, 1981, Ser. No. 294,391

Int. Cl.³ H04M *19/00*

U.S. Cl. 179—70 **15 Claims**



1. A subscriber line interface circuit for a two-wire telecommunication subscriber line, comprising in combination:

(a) means for supplying DC power to said subscriber line including a DC voltage source connected across the two wires thereof;

(b) an automatic power denial circuit, including:

(1) a relatively low value, first resistor connected in one wire of said subscriber line;

(2) a relatively high value, second resistor connected in series with said first resistor;

(3) a first transistor connected to respond to the voltage drop across said first and said second resistors, thereby to sense an overload condition; and

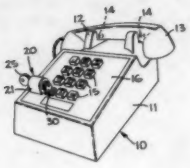
(4) a second transistor, connected across said second resistor and controlled by said first transistor, said second transistor being biased to be normally conducting when no overload condition exists, thereby providing a low resistance circuit path around said second resistor, and biased to be cut off when an overload condition exists, thereby to interrupt said circuit path around said second resistor and deny power to said subscriber line.

4,398,067

LOCKING DEVICE FOR TELEPHONE INSTRUMENT

Herbert J. Rubinstein, 15720 Winchester Blvd., Ste. 2C, Los Gatos, Calif. 95030, and Morton K. Rubinstein, 14954 Corona Del Mar, Pacific Palisades, Calif. 90272

Filed Mar. 11, 1980, Ser. No. 129,470
Int. Cl.[3] H01H 9/28; H04M 1/66
U.S. Cl. 179—189 D 18 Claims



1. In combination:

(A) a telephone instrument having an apertured base through which projects at least one depressible dialing element; and

(B) a locking device comprising;

(a) a body mounted on said base of said telephone instrument, said body being formed with a bore; and

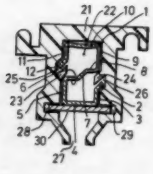
(b) a movable member disposed in said bore, one end of said movable member being movable in one direction into confronting relation with said dialing element for depressing said depressible dialing element for locking said telephone instrument and being movable in another direction for releasing said depressed dialing element to enable said telephone instrument to operate.

4,398,068

CONDUCTOR STRIP AND HOUSING THEREFOR FOR A CURRENT CONDUCTOR RAIL

Hugues E. Waldmeier, 30 Rue d'Ottmarsheim, 68170 Rixheim, France

Filed May 15, 1981, Ser. No. 264,190
Claims priority, application Switzerland, May 20, 1980, 3904/80
Int. Cl.[3] B60M 1/00
U.S. Cl. 191—23 A 8 Claims



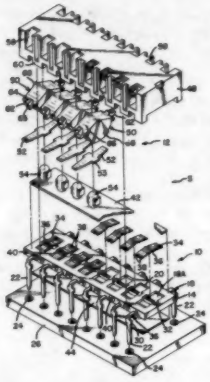
1. A conductor rail arrangement comprising a housing made of an insulating material, said housing having a downwardly extending opening, and a conductor comprising an elongated sectional bar extending within said housing and having a cross-section which is rotatably symmetrical in a 180-degree rotation about the horizontal axis of the elongated sectional bar, said housing having wall means defining grooves on opposite sides of said housing, a strip-shaped conductor mounted in said grooves on both sides of the downward opening to increase the current carrying capacity, said strip-shaped conductor having a surface remote from the opening of bearing against said sectional bar only for low-amperage currents and a surface on its side facing the opening adapted to be contacted by a current collector.

4,398,069

SEALED ELECTRICAL CONTACT ASSEMBLY AND ACTUATING MECHANISM THEREFOR

Billy E. Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 26, 1982, Ser. No. 371,838
Int. Cl.[3] H01H 19/00, 21/00
U.S. Cl. 200—6 R 20 Claims



1. An electrical switch comprising:

dielectric frame means having recess means in top surface means thereof;

stationary electrical contact means secured in said frame means and including opposed sets of stationary contact section means respectively within said recess means, one of each of the opposed sets of stationary contact section means having pivot means;

movable electrical contact means pivotally mounted onto said pivot means;

housing means secured onto said frame means; and

spring-biased contact-operating means movably disposed in said housing means including rocker means having slot means in which leaf spring means and button means are mounted, said leaf spring means urging said button means into engagement with respective movable contact means for moving said movable contact means to one position for electrically connecting said opposed sets of stationary contact section means and to another position for electrically disconnecting said opposed sets of stationary contact section means.

4,398,070

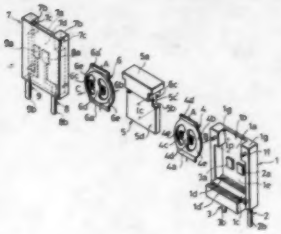
TWO-MOTION PUSH-BUTTON SWITCH

Shiro Kondo, Furukawa, and Ken Mizuta, Miyagi, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 333,786
Claims priority, application Japan, Dec. 24, 1980, 55-185812[U]
Int. Cl.[3] H01H 15/02, 21/00
U.S. Cl. 200—16 R 3 Claims

1. A push button switch comprising first and second switch portions mounted in a case; each switch portion including a respective movable contact piece formed of a resilient metal plate having a reversing portion adapted to change its position suddenly upon application of a pressing force different that the pressing force needed to change the position of the reversing portion of the other movable contact, a respective movable contact portion, and arms formed to hold the reversing portion therebetween; fixed contact portions formed in the case at a position confronting each respective movable contact portion, and means including a single slider engaging each of said

contact pieces for applying said respective pressing forces to change the position of the respective reversing portions so that



the first and second switch portions may be actuated at different times by a single actuation of said slider.

4,398,071

SNAP-ACTION SWITCH

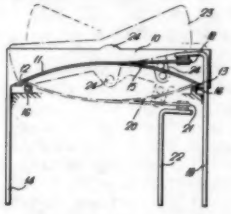
Robert J. Hodges, Cheshunt; Aubrey M. Crick, Epping, and Charles E. Rogers, Bishop's Stortford, all of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,633

Claims priority, application United Kingdom, Mar. 31, 1981, 8110085

Int. Cl.³ H01H *21/44*

U.S. Cl. 200—67 DB 4 Claims



1. An electrical snap-action switch, which includes a strip of a springy metal held captive in a metal carrier member, the strip being so mounted that it is bowed and can assume either a first or a second stable position, wherein a contact-carrying arm integral with the bowed strip extends generally parallel thereto from one end of the bowed strip towards the other end thereof, so that when the strip is snapped between its said positions the arm is switched from its first position to its second position, the arm's contact means engaging stationary contact means in at least one of its said positions, wherein the carrier member has a concavely curved inner face close to which the bowed strip lies in its first position, wherein the carrier member is in electrical contact with an external terminal of the switch and also with said one end of the bowed strip and thus with the contact carrying arm, and wherein a switch actuating member engages the bowed strip at a position between its mid-point and its said other end, the operation of the actuating member snapping the bowed strip between its said position and thus switching the contact-carrying arm between its two positions.

4,398,072

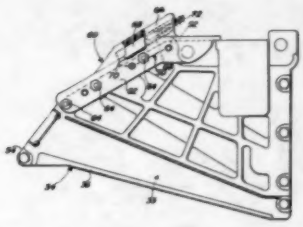
HIGH-VOLTAGE DEVICE

R. H. Harner, Park Ridge; R. T. Swanson, North Riverside, and G. J. Zvanut, Skokie, all of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Feb. 17, 1981, Ser. No. 235,334

Int. Cl.³ H01N *33/12*

U.S. Cl. 200—146 R 26 Claims



1. Apparatus for eliminating or reducing the deterioration of a surface region of an insulative member included in a high-voltage device which also includes a conductive member connectable to one side of a source of alternating high voltage; the surface region being located between first and second portions of the insulative member; the first portion (i) partially defining the boundary of the surface region, (ii) abutting or being closely adjacent to the conductive member, and (iii) being at the same or nearly the same voltage as the conductive member; the second portion being remote from the first portion and, except for stray capacitance, being isolated from both ground and the other side of the source so as to be essentially electrically floating; leakage current supplied to, and flowing across, the surface region directly from and at the voltage of the conductive member being small but, nevertheless, sufficient to result in the occurrence of partial discharges thereon, which partial discharges erode and deteriorate the surface region; wherein the apparatus comprises:

an electrically conductive projection electrically connected to the conductive member, the projection being insulated from and positioned sufficiently close to the surface region so that a majority of the current supplied to the surface region is current which does not flow across the surface region directly from the conductive member, but is rather supplied via close capacitive coupling between the projection and the surface region, whereby the voltage gradient at the surface region is insufficient for any, or a substantial number of, partial discharges to occur.

4,398,073

FASTENING DEVICE FOR A SWITCH

Jakob Botz, Ingersheim; Rolf Feger, Bietigheim-Bissingen; Erich Mutschler, Bietigheim-Bissingen; Hubert Spazierer, Bietigheim-Bissingen, and Adam Weber, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Division of Ser. No. 126,327, Mar. 3, 1980, Pat. No. 4,327,264, which is a continuation of Ser. No. 898,767, Apr. 21, 1978, abandoned. This application Sep. 25, 1981, Ser. No. 305,543

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1977, 2719194; Dec. 31, 1977, 2759182

Int. Cl.³ H01H *9/02*

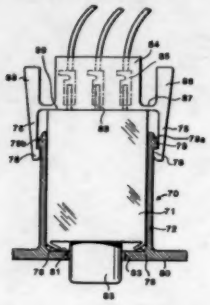
U.S. Cl. 200—295 4 Claims

1. A fastening device for a switching housing comprising:

a receiving member comprising a cavity adapted to receive said switch housing, said cavity having a side wall forming a limiting surface for limiting lateral movement of said switch housing, and an end wall perpendicular to said side wall, said side wall having shoulder portions;

a second member disposed opposite said end wall and adapted to engage one end of said housing, said second

member including resilient holding elements each including a portion adapted to engage one of said shoulder portions, each of said resilient holding elements urging its said portion in a first direction into engagement with one of said shoulder portions; and at least one resilient second



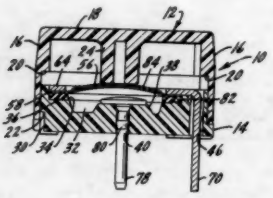
element disposed between said switch housing and one of said receiving member or said second member for urging said portion in a second direction into engagement with said shoulder, said second direction being substantially perpendicular to said first direction.

4,398,074

LOW PROFILE SWITCH HAVING A SEALED INTERIOR

David J. Danielson, McHenry, and Bernard J. Golbeck, Crystal Lake, both of Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Jun. 12, 1981, Ser. No. 272,899
Int. Cl.³ H01H *13/06, 13/64*
U.S. Cl. 200—302 **8 Claims**



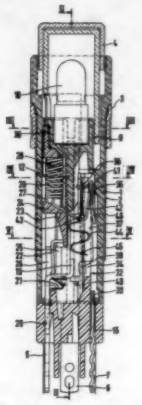
1. An electric switch, comprising:
a base;
a pin contact extending in sealing relation through the base;
a movable contact including a central dome portion in spaced, facing relation with the pin contact;
a gasket between the periphery of the movable contact and the base; and
retainer means urging the movable contact into sealing engagement with the gasket so as to completely seal the space between the dome portion of the movable contact and the base.

4,398,075

MECHANICAL SWITCH

Ernst Vogel, Basel, Switzerland, assignor to Elekto-Apparatebau Olten, A.G., Olten, Switzerland

Filed Jul. 1, 1981, Ser. No. 279,616
Claims priority, application Switzerland, Jul. 8, 1980, 5213/80
Int. Cl.³ H01H *9/00, 21/40*
U.S. Cl. 200—314 **22 Claims**



1. In a mechanical switch, the combination of:
(a) an elongated tubular housing;
(b) a first contact in said housing;
(c) an elongated second contact in said housing mounted for pivotal movement about a preselected axis between first and second positions of engagement with and disengagement from said first contact, said second contact extending at least approximately parallel to the longitudinal direction of said housing;
(d) resilient means for biasing said second contact to either of said positions;
(e) means for stressing said resilient means including a lever having a first arm which extends at least approximately parallel to the longitudinal direction of said housing and a second arm, each of said arms having a free end, and said lever being mounted in the region of one of said free ends for pivotal movement about a predetermined axis which is at least approximately parallel to said preselected axis, said lever defining bearing means movable transversely of said second contact between first and second end positions in which said resilient means respectively urges said second contact to said first and second positions;
(f) actuating means movable with reference to said housing from a starting position; and
(g) means for transmitting motion from said actuating means to said lever to thereby effect movement of said bearing means between said end positions, said motion transmitting means including resilient restoring means for said actuating means, and said restoring means bearing against said lever in the region of the other of said free ends.

4,398,076

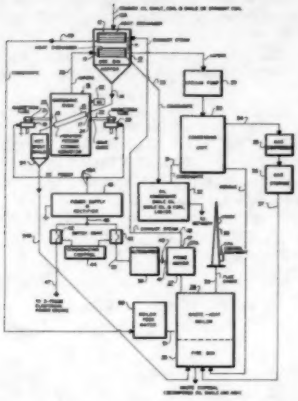
PRODUCT RECOVERY METHOD AND SYSTEM FOR HYDROCARBON MATERIALS

Lester Hanson, 1903 Princeton Ave., Salt Lake City, Utah 84108

Filed Mar. 6, 1981, Ser. No. 241,229
Int. Cl.³ H05B *6/78;* **C10G** *1/02*
U.S. Cl. 219—10.55 A **6 Claims**

1. Structure for processing feedstock materials comprised of at least one of the following, oil-shale and coal, for recovering,

from a combustion-suppressant-gas-protected microwave oven, useful vaporized hydrocarbon materials and gases and for subjecting to combustion discharged solid materials of the so-processed feedstock coming from said oven, whereby to provide combustion energy to steam-driven means for providing electrical power to a load including said microwave oven, said structure including, in combination; a microwave oven having a throughput feeder and being provided with microwave energy generation means for heating incoming materials comprising said feedstock on said feeder, said feeder having an input end and also a discharge end for discharging heated spent solid materials of said feedstock as so-processed on said feeder



in said oven, and said microwave energy generation means being constructed for coupling to an external, electrical power source; means for introducing a nonflammable gas into said oven, whereby to suppress combustion within said oven; first means coupled to said oven for receiving gases and vapors produced in said oven; second, condenser means for liquifying said vapors coupled to said first means; and third means receiving discharged heated solid materials coming from said feeder at said discharge and thereof and responsive to the fuel-character and sensible heat condition of said discharged heated solid material for firing the same and thereby steam-generating electrical energy at least a portion of which is coupled to said microwave energy generation means.

4,398,077

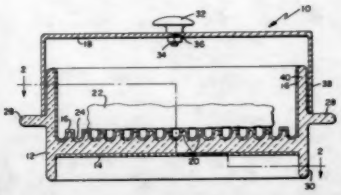
MICROWAVE COOKING UTENSIL

George Freedman, Wayland, and Palmer P. Derby, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 194,167, Oct. 6, 1980, abandoned. This application Aug. 7, 1981, Ser. No. 291,135

Int. Cl.³ H05B *6/64*

U.S. Cl. 219—10.55 E **15 Claims**



1. A microwave oven cooking utensil comprising:

a microwave transparent dish having an opening for placing a food body therein;

a layer of resistive material positioned over at least a portion of the outside surface of said dish; and

means for substantially shielding the interior of said dish from microwave energy, said means comprising the combination of a conductive layer covering a substantial portion of the inside of said dish and a conductive lid removably positioned over said opening.

4,398,078

FINISHING OF ANNULAR ARTICLES

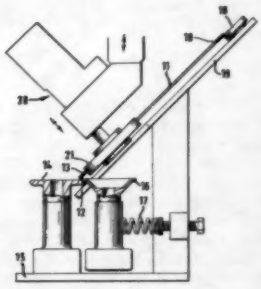
Ralph F. J. Flower, "Littledean", Bath Rd., Devizes, Wiltshire, England

Filed May 28, 1980, Ser. No. 153,877

Claims priority, application United Kingdom, May 30, 1979, 7918729

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M **15 Claims**



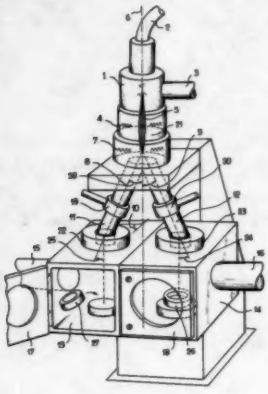
1. A method of finishing an annular article having a peripheral wall to provide an annular article having a substantially constant radial thickness, which method comprises holding said article between at least one pair of radially adjacent rotatable members mounted on a frame with the axes of said rotatable members substantially parallel, one said rotatable member being spatially fixed and engaging the inner or outer circumference of said article peripheral wall and the other said rotatable member being biased in a direction normal to its axis of rotation so as to be urged towards said spatially fixed and radially adjacent rotatable member so as also to engage said article peripheral wall circumference radially aligned with and immediately juxtaposed that circumference engaged by said one rotatable member, driving at least one of said rotatable members to cause the article to be rotated, and removing unwanted material from the article during the rotation thereof by operation of machining means juxtaposed the rotating article, the spatially fixed rotatable member providing a reference surface against which the machining operation is carried out to insure formation of a constant radial wall thickness regardless of the planar configuration of the annular article, said machining means including a head having a substantially circular tool element rotatable about its own axis and mounted with its axis at an angle to the vertical, the head being mounted on a frame for movement both substantially vertically and substantially parallel to the axis of rotation of the tool element, the machining operation being performed by actuating the head as the article is rotated.

4,398,079

MACHINE FOR WORKING METALS USING ELECTRON BEAMS

Philippe Dard, Boussy Saint Antone, and Roland Cazes, Saint Maur des Fosses, both of France, assignors to Sciaky Intertechnique S.A., Vitry sur Seine, France

Filed Feb. 6, 1981, Ser. No. 232,159
Claims priority, application France, Mar. 31, 1980, 80 07215
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 EC **7 Claims**



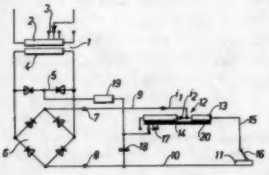
1. Machine for working metals using an electron beam, comprising an electron gun and a plurality of enclosures associated with means for creating a vacuum, these enclosures containing workpieces to be worked on to which the beam produced by the gun is directed, said machine characterised in that the gun and the enclosures occupy a fixed position in relation to one another, the gun being connected to each of the enclosures through separate ducts provided with a sealing valve, a stage for electromagnetic deflection of the beam being provided between the gun and the ducts so as to deflect the beam successively towards the enclosures through the ducts.

4,398,080

ARC WELDING POWER SOURCE

Jan G. Johansson; Christian J. Henningsen, and Arvo Köster, all of Laxa, Sweden, assignors to ESAB Aktiebolag, Sweden

Filed Oct. 15, 1981, Ser. No. 311,868
Claims priority, application Sweden, Oct. 24, 1980, 8007479
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—130.1 **8 Claims**



1. Arc welding power supply comprising:

a welding rectifier means connected to an alternating current supply and provided with two direct current terminals,

a welding electrode,

a work,

a welding inductor provided with an iron core, a main winding and an auxiliary winding, means for connecting in series said welding electrode, said work, said terminals and said main winding,

a smoothing circuit comprising a capacitor means in series with a smoothing inductor, the winding of said smoothing inductor comprising the auxiliary winding of the welding inductor wound on the iron core and connected to the main winding such that the main winding and the auxiliary winding supply ampere-turns in the same direction when passed by a current, said smoothing circuit connected in parallel to the main winding, the electrode and the work, and

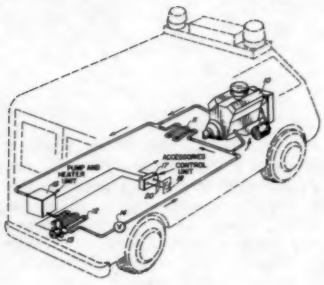
a charging rectifier means connected to the auxiliary winding and in series with the capacitor means, said charging rectifier comprising a charging circuit with the capacitor means and connected to the alternating current supply, said charging rectifier means arranged to block the passage of the discharge current of the capacitor means.

4,398,081

STAND-BY HEATING/POWER SUPPLY SYSTEM FOR A MOTOR VEHICLE

Mark H. Moad, P.O. Box 721, Phoenix, Ariz. 85001, assignor to Mark H. Moad, Phoenix, Ariz.

Filed Oct. 23, 1980, Ser. No. 199,974
Int. Cl.³ H05B *1/02*; H01J *9/00*; B60L *1/10*
U.S. Cl. 219—202 **7 Claims**



1. In a fluid-cooled motor vehicle having a heating system comprised of a heat exchanger for heating the vehicle interior and a recirculating fluid line interconnecting the heat exchanger and the engine coolant supply and having an electric heater fan controlled by a standard vehicle heater fan control for moving air across the heat exchanger, the improvement comprising a stand-by heating/power supply system including in combination:

an auxiliary electric heater and pump connected in series in the recirculation coolant line adjacent the heat exchanger in the vehicle interior, said pump operating to circulate coolant from said auxiliary electric heater first into the heat exchanger in said coolant line and from the heat exchanger to recirculate coolant throughout the entire motor vehicle cooling system so long as said pump is operating;

an auxiliary fan control connected to said heater fan for operating said heater fan independently of the standard vehicle fan control;

electrically operated auxiliary accessories in the motor vehicle interior; and

a control unit mounted in the vehicle and adapted for connection with an electrical power source external to the motor vehicle and having a plurality of outputs respectively connected with said electrically operated accessories, said auxiliary electric heater and pump, and with said auxiliary fan control to maintain said auxiliary accessories in a stand-by operating condition and for operating said auxiliary electric heater, pump and auxiliary fan control when said motor

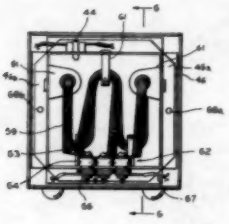
vehicle is inoperative and said control unit is connected with the external power source.

4,398,082

HEATING APPARATUS

Robert Johannsen, Algonquin, Ill., assignor to Aubrey Manufacturing, Inc., Union, Ill.

Filed Mar. 9, 1981, Ser. No. 241,758
Int. Cl.³ F24H 3/04; H05B 1/00
U.S. Cl. 219—370 1 Claim



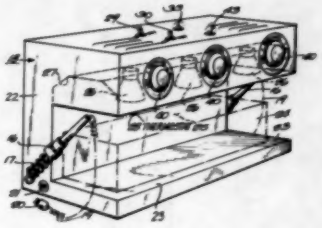
1. An improved electrical heating apparatus, said apparatus comprising:
a housing,
said housing including an upper housing portion mating with a lower housing portion,
an air inlet,
said air inlet positioned at one of said housing portions,
an air outlet,
said air outlet positioned at the remaining of said housing portions;
fan means disposed within said housing for moving air between said air inlet and said air outlet;
mounting frame assembly means disposed within said lower housing portion intermediate said fan means and said air outlet,
said frame assembly means including a multiplicity of slots positioned horizontally and vertically around the periphery thereof;
said frame assembly further including a heating cavity for heating air moving between said air inlet and said air outlet;
heater element support means;
said support means positioned at selected of said horizontal slots and at selected of said vertical slots;
heater element means strung across said heating cavity,
said heater element means being strung through and between said horizontal and vertical support means in a non-planar configuration to maximize the transfer of heat to air moving through said cavity,
each said support means having retaining means formed thereon engageable with one said slot when said heater element means is strung therethrough,
said support means positioned at selected of said horizontal slots, said support means positioned at selected of said vertical slots that lie in respective perpendicular planes rotated 90° with respect to each other,
said support means including eyelet means which maintains said heating element means in a fixed position such that said heating element do not come into direct contact with said mounting frame assembly,
said eyelets being disposed to cause said heating element means to be in a folded convoluted shape when strung through said eyelets and said heating element means having its ends connected by terminals that are in proximate adjacent relationship whereby the heating element means can be disposed in a very small heating cavity and thereby produce efficient heating of the maximum amount of air being moved through the cavity of the apparatus.

4,398,083

ELECTRIC HEATING APPARATUS FOR PRE-HEATING AND MOLDING FILLET-FORMING WAX STRIPS

Charles H. Mack, N88 W14981 Jefferson Ave., Menomonee Falls, Wis. 53051

Continuation of Ser. No. 56,589, Jul. 11, 1979, abandoned. This application Jun. 26, 1981, Ser. No. 277,518
Int. Cl.³ H05B 1/02, 3/02
U.S. Cl. 219—479 5 Claims



1. An electric heating apparatus for fillet wax, said apparatus including:
a housing
a platform in said housing for holding strips of wax,
an electric radiant heater element supported by said housing and disposed above the platform in spaced relation thereto,
an electric circuit in said housing for energizing the heater element,
a thermostat in the circuit and located between the heater element and the platform for limiting the ambient temperature of the space between said heater element and said platform
said circuit including means for varying the voltage applied to said heater element and thereby the heat output thereof,
a fillet-forming tool having a tip,
a holder on said housing for supporting said fillet-forming tool during non-use periods, said tool including
an electric heating element to heat the tip,
an electric circuit in said housing and connected to said tool by a flexible power cord for energizing the element,
said heating element circuit including a potentiometer for adjusting the voltage and thereby regulating the heat output of the heating element,
said heater element being operative so that the wax is kept at a soft but not melting temperature.

4,398,084

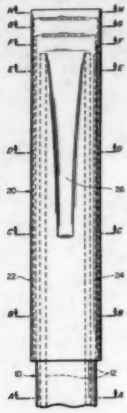
END SEAL FOR STRIP HEATERS

Robert J. Walty, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 15, 1981, Ser. No. 273,525
Int. Cl.³ H05B 3/34
U.S. Cl. 219—528 2 Claims

1. A conductive polymeric strip heater, which comprises at least two elongate electrodes embedded in a a strip of a conductive polymeric composition, one end of said heater having

been cut to length and then sealed by extruding an end portion of said strip of conductive polymeric composition to cover the



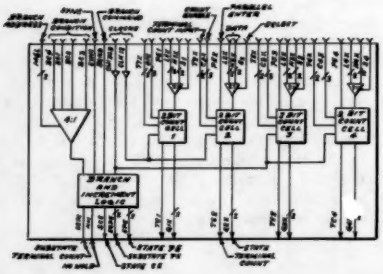
cut ends of said electrodes and to reduce the cross-sectional area of said end portion.

4,398,085

UNIVERSAL TIMING ARRAY

Douglas M. Benedict, Santa Monica, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 25, 1980, Ser. No. 210,476
Int. Cl.³ G04F 5/00
U.S. Cl. 377—20 **14 Claims**



1. In a timing and control network having clock means and in which branch address, branch condition, branch command, synchronization, terminal count input, terminal count output, count enable, parallel enter, L1, L2, H1 and H2 data, select, substate terminal count, no hold, state count enable, complemented parallel entry, uncomplemented parallel entry, state parallel entry and Q state signals are developed and utilized each through single line access, the improvement residing in a universal timing array, said universal timing array being comprised of a single, large scale, integrated circuit having

a multiplicity of 2-bit counter means operating on said clock means, each said 2-bit counter means being controlled by parallel entry, first, second and third enable, and first and second terminal count input control signals, each said 2-bit counter means generating a terminal count output and first and second state Q signals,

a parallel data entry multiplexer for each 2-bit counter means, each said multiplexer receiving L1, L2, H1 and H2 data signals and selecting either L1 and L2 or H1 and H2 data in response to a select signal for input to its associated 2-bit counter means,

a branch and increment logic circuit operating on said clock means, said branch and increment logic circuit receiving synchronization, branch command, branch condition, substate terminal count and no-hold signals and outputting a state count enable signal, complemented and uncomplemented parallel entry signals and state parallel entry signals, and

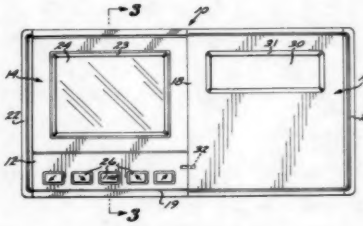
a branch and increment logic circuit input multiplexer, receiving first, second, third and fourth branch condition signals and first and second branch address signals, said branch and increment logic circuit input multiplexer selecting branch condition signals in response to said first and second branch address signals for input to said branch and increment logic circuit.

4,398,086

GAME-CALCULATOR HAVING SLIDING MASK

Jay Smith, III, Pacific Palisades, Calif., assignor to Smith Engineering, Santa Monica, Calif.

Filed Jan. 6, 1982, Ser. No. 337,229
Int. Cl.³ G06C 7/02
U.S. Cl. 235—145 R **8 Claims**



1. A game-calculator having a programmed data processor for controlling the calculator and the game functions, comprising:

a housing having a game end and a calculator end;

the calculator end having a plurality of calculator inputs;

the game end having a display panel and a plurality of game inputs;

a slide member, slideably mounted on the housing and of a size sufficieant to cover the plurality of calculator inputs when positioned at the calculator end, and to cover the display panel and the plurality of game inputs when positioned at the game end;

an opening in the slide, positioned to expose the portion of the display panel employed in displaying the operation of the game-calculator as a calculator.

4,398,087

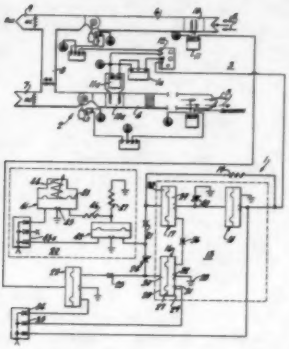
FLUID SIGNAL SQUARE ROOT EXTRACTOR

Scott B. Bramow, Oak Creek; Louis J. Crum, Port Washington, and William J. Riebe, West Allis, all of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.

Continuation of Ser. No. 108,589, Dec. 31, 1979, abandoned.
This application Jun. 21, 1982, Ser. No. 390,515
Int. Cl.³ G06M 1/12
U.S. Cl. 235—200 PF **9 Claims**

1. A square root extractor unit for producing an output signal which is the square root of a differential input signal, comprising an operational amplifier unit including separate first and second fluid input amplifiers defining the inverting input and the non-inverting input of said amplifier unit, each of said amplifiers having input means with a high impedance and each producing a linearly related output of the input signal,

said amplifiers being connected to each other between a supply input port and a signal output port for comparing the output signal of said first amplifier with said differential input signal, said amplifier unit including input resistance means adapted to be connected to the differential input signal and having a



negative feedback resistance means connecting the output of the operational amplifier unit to the input of the operational amplifier unit, said input resistance means including a non-linear resistor establishing a differential input signal proportional to the square root of the flow and said feedback resistance means including only linear resistor means.

4,398,088

AUTOMATIC BANK NOTE TRANSACTION APPARATUS

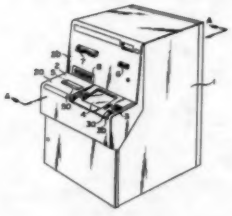
Minoru Hirose, Yokohama; Junichiro Hara, Tokyo, and Hiroyuki Kubotera, Matsuda, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 18, 1981, Ser. No. 332,299

Claims priority, application Japan, Dec. 24, 1980, 55-183650

Int. Cl.³ G06F *15/30*

U.S. Cl. 235—379 **7 Claims**



1. An automatic bank note transaction apparatus provided with a housing having a money inlet slot through which bank notes for deposit are to be inserted in said apparatus, comprising:

a bank note receiving chamber for the bank notes inserted through said money inlet slot, disposed in said housing correspondingly to said money inlet slot;

introduction-transfer means for taking out the bank notes collected in said receiving chamber and transferring the bank notes through an introduction-transfer path;

discriminating means disposed in said introduction-transfer path to discriminate fit sheets from unfit ones among the introduced bank notes;

distributing means disposed in said introduction-transfer path so as to distribute the fit and unfit sheets in accordance with the result of the discrimination by said discriminating means;

a temporary collecting section for the unfit sheets distributed by said distributing means;

at least one storage section for the fit sheets distributed by said distributing means; and

return transfer means for taking out the unfit sheets collected in said temporary collecting section and transferring the unfit sheets through a return path, one end portion of said return path being connected with said temporary collecting section, and the other end portion of said return path being connected with said receiving chamber so that the unfit sheets transferred through said return path may be returned to said receiving chamber.

4,398,089

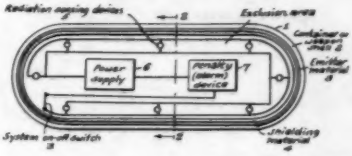
PENETRATION SENSING SYSTEM WITH RADIATION-EMITTING MATERIAL

James L. Sharpe, Morris Plains, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1972, Ser. No. 217,408

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—336.1 **10 Claims**



1. Apparatus for sensing penetration of a container, comprising radiation-emitting material substantially on all sides of said container, a radiation shielding rupturable member inside of said radiation-emitting material, and radiation sensing means inside of said radiation shielding member to sense radiation emissions or leakage if said radiation shielding member should be penetrated; said radiation shielding member completely shielding said radiation sensing means from radiation prior to rupturing of said radiation shielding member, so that only upon rupturing of said radiation shielding member the radiation emitted by said radiation-emitting material reaches said radiation-sensing means.

4,398,090

PANORAMIC ION DETECTOR

Jean-Francois Eloy, Saint Ismier, France, and Eberhard Unsöld, Munich, Fed. Rep. of Germany, assignors to Commissariat a l'Energie Atomique, Paris, France and Gesellschaft fur Strahlen und Umweltforschung mbH, Neuherberg, Fed. Rep. of Germany

Continuation of Ser. No. 958,724, Nov. 8, 1978, abandoned. This application Oct. 13, 1981, Ser. No. 310,995

Claims priority, application France, Nov. 15, 1977, 77 34271; Nov. 23, 1977, 77 35185

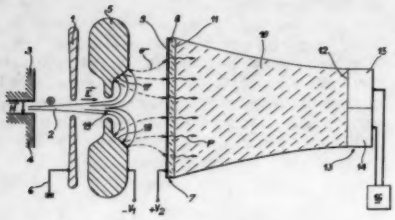
The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—299 **7 Claims**

1. A panoramic detector of ions spatially distributed in different beams, comprising a plane symmetry diaphragm having an elongated opening permitting the passage of said beams and being at earth potential, a conversion electrode for converting ions into electrons having an opening facing the diaphragm opening, said conversion electrode having the same plane of symmetry as said diaphragm and being at a negative potential relative to the earth potential, and a planar electrode facing the conversion electrode and being at a positive potential relative to the potential of the conversion electrode, the face of the

conversion electrode facing the planar electrode having a predetermined shape in such a way that the electron beams



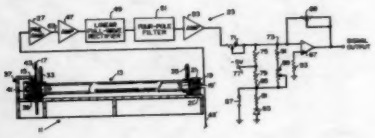
formed retain the same spatial distribution as the beams of ion to be detected in the presence of an applied magnetic field.

4,398,091

TEMPERATURE COMPENSATED GAS ANALYZER

Robert E. Passaro, Walnut Creek, Calif., assignor to Andros Analyzers Incorporated, Oakland, Calif.

Filed Aug. 24, 1981, Ser. No. 295,570
Int. Cl.³ G01N *21/26*
U.S. Cl. 250—343 **5 Claims**



1. In an infrared gas analyzer including a sample cell for containing a gas mixture to be analyzed, source means for directing infrared energy through the sample cell, means for periodically interrupting the infrared energy at a predetermined frequency, detector means responsive to infrared energy of at least one preselected wavelength for producing a signal representative of the infrared energy passing through the sample cell and having a frequency corresponding to the predetermined frequency, and signal processing means for processing the signal output of said detector means to produce an output signal having an amplitude proportional to the concentration of the preselected gas in the mixture being analyzed, the improvement comprising amplifier means forming part of the signal processing means for receiving the signal from the detector means, said amplifier means including temperature responsive means adapted to compensate for variations in the signal from the detector means resulting from a change in ambient temperature, and an output amplifier also forming part of the signal processing means, said output amplifier including a manually adjustable input resistor for establishing a zero setting in the output of said output amplifier, a variable feedback resistor for adjusting the span of said output amplifier, and temperature responsive calibration means coupled with said output amplifier for indicating signal change in said output amplifier due to temperature variation to permit readjustment of span by said variable feedback resistor.

4,398,092

SHAPED DETECTOR

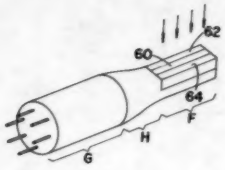
Roland W. Carlson, Lyndhurst, Ohio, assignor to Technicare Corporation, Solon, Ohio

Continuation-in-part of Ser. No. 64,835, Aug. 8, 1979, Pat. No. 4,292,538. This application May 20, 1981, Ser. No. 265,714
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—361 R **9 Claims**

1. A computerized tomographic scanning apparatus for examining with radiation a planar slice of an object in the plane of a scan circle and producing a representation of an image of the planar slice, comprising:

at least one source of radiation for producing at least a beam of radiation in the plane of said scan circle;

radiation detector means having at least one radiation detector for producing electrical signals in response to received radiation, said detector means disposed to receive from the source radiation which has traversed the scan circle, said radiation detector including a scintillation crystal for



converting variations in incident radiation intensity into variations in light intensity, said scintillation crystal having a spatially variant radiation conversion efficiency such that said radiation detector has a non-constant spatial response in at least a first dimension in the plane of the scan circle; and

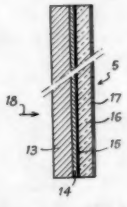
processing means for processing the electrical signals from the detector means to produce the representation of an image.

4,398,093

CONVERTER FOR CONVERTING NON-LUMINOUS PHOTONS INTO LUMINOUS PHOTONS

Jean-Claude Dufay, Blois, France, assignor to Etat Francais, represente par le Ministere de l'Environnement et de Cadre de Vie, Laboratoire Central des Ponts et Chaussess, Paris, France

Filed Aug. 11, 1980, Ser. No. 176,996
Claims priority, application France, Aug. 14, 1979, 79 20708
Int. Cl.³ G01J *1/58*
U.S. Cl. 250—483.1 **7 Claims**



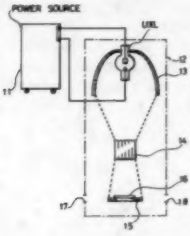
1. In a converter for converting non-luminous input photons, such as X or γ photons, into luminous photons, said converter being designed for use in combination with an optical transmitting device and an image display device, said converter being in the form of an independent screen, comprising a support layer, a metal foil in which said non-luminous input photons are converted into non-luminous photons of lower energy, by collision of said input photons on electrons of said metal foil, and a layer of luminophore in which said non-luminous photons of lower energy are converted into luminous photons, the improvement comprising a light-reflecting layer of titanium oxide interposed between said metal foil and said layer of luminophore so as to enhance the luminosity of the converter.

4,398,094

EQUIPMENT AND METHOD FOR ANNEALING SEMICONDUCTORS

Tatsumi Hiramoto, Himeji, Japan, assignor to Ushio Denki Kabushikikaisha, Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,762
Claims priority, application Japan, Jan. 14, 1980, 55-2092
Int. Cl.³ H01L *21/26*
U.S. Cl. 250—492.1 **2 Claims**



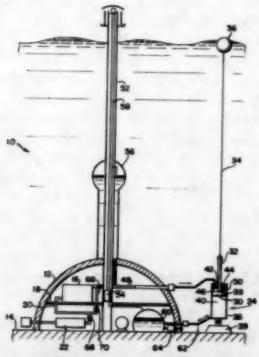
1. A (semiconductor annealing) equipment comprising:
(a) a short-arc type rare gas discharge lamp having an anode, cathode, and a sealed gas pressure with the condition, $140 \geqq P \times l \geqq 16$, where l (mm) is the distance between the anode and cathode and P is the sealed gas pressure (atmospheric pressure) at room temperature (25° C.);
(b) optical means for converging emitted light from the short-arc type rare gas discharge lamp to irradiate the surface of a semiconductor;
(c) power source means for controlling the intensity of the emitted light of the short-arc type rare gas discharge lamp; and
(d) a stage for mounting the semiconductor to be irradiated by the lamp.

4,398,095

WAVE ACTIVATED POWER GENERATION SYSTEM

Yasuo Ono, Gifu, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jul. 22, 1981, Ser. No. 286,053
Claims priority, application Japan, Jul. 22, 1980, 55/100379; Jul. 22, 1980, 55/100380; Jul. 22, 1980, 55/100381; Jul. 25, 1980, 55/102989
Int. Cl.³ F03B *13/12*
U.S. Cl. 290—53 **26 Claims**



1. A wave activated power generation system of the float type comprising at least one piston-cylinder means having an anchored cylinder and a piston slidable in said cylinder and cooperating with said cylinder to form a first chamber above said piston and a second chamber below said piston, said cylinder having an intake port and an exhaust port both formed at an upper portion thereof to communicate with said first chamber and each provided with a check valve means; float means connected through a cable to said piston of said piston-cylinder means; first fluid storage means connected to said intake port of said first chamber for supplying said first chamber with a fluid under a first pressure; second fluid storage means connected to said exhaust port of said first chamber to receive the fluid supplied from said first chamber by pumping action of said piston caused by vertical displacement of said float due to waves, said second fluid storage means being adapted to cause a second pressure higher than said first pressure to act on said check valve of said exhaust port of said first chamber; a waterwheel generator having an inlet connected to said second fluid storage means and an outlet connected to said first fluid storage means so that said generator is driven by the flow of fluid from said second fluid storage means to said first fluid storage means; and pressure regulating means connected to said second chamber for maintaining said second chamber at a third pressure lower than said first pressure, the difference in pressure between said first and second chambers ceaselessly applying a downward force on said piston to maintain said cable in a tensed condition.

4,398,096

AERO ELECTRO TURBINE

Einar Faurholtz, 3 Sims Ave., Vallejo, Calif. 94590

Filed Jul. 20, 1981, Ser. No. 284,601
Int. Cl.³ F03D *1/02, 1/04*
U.S. Cl. 290—55 **6 Claims**

1. A wind-powered generator comprising
concentrator means for concentrating and focusing a fluid flow, the concentrator means having a flow chamber which defines a fluid flow path, a flared mouth which is located at one end of the flow chamber, a focusing surface which is located at the opposite end of the flow chamber, and a coupling port, the focusing surface having a focus located within the flow chamber;
a turbine housing having an inlet and an exhaust port, the turbine housing being positioned within the flow chamber so that the inlet opens to the focusing surface focus, the focusing surface and the turbine housing inlet being positioned relative to one another so that the focusing surface receives the fluid flow from the fluid flow path of the flow chamber and focuses the fluid flow into the turbine housing inlet;
an exhaust tube, open at both ends, extending from the exhaust port and through the coupling port to the exterior of the concentrator, the exhaust tube being communicatively coupled to the exhaust port so that the fluid flowing into the inlet is exhausted from the turbine housing to the exterior of the concentrator;
a first turbine positioned in the inlet for rotation in response to fluid flowing into the inlet; and
generator means for converting rotational motion into electrical energy, the generator means being communicatively coupled to the first turbine so that the rotation of the turbine is converted into electrical energy.

4,398,097

AUTOMATIC TRANSFER SWITCH

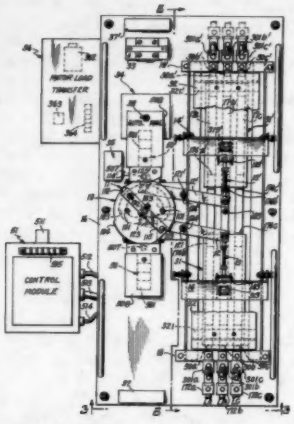
Frank M. Schell, Towaco; George S. DiMonico, Waldwick, and Joseph Bania, Chatham, all of N.J., assignors to Indian Head, Inc., New York, N.Y.

Continuation of Ser. No. 101,741, Dec. 10, 1979, abandoned. This application Jan. 27, 1982, Ser. No. 343,048
Int. Cl.³ H02J *7/00*
U.S. Cl. 307—64 **7 Claims**

1. An automatic transfer switch comprising:
a pair of molded case switches having contacts operated by

lever interconnections and a cam mechanism which sequences one switch of said pair for the normal power source and the other switch of said pair for the emergency power source whereby said lever interconnections position the contacts of one of said switches to be closed while the other is open;

a rotatable cam mechanism for programmed sequencing the make and break of the contacts to each of said molded case switches, one for the normal power source and the other for the emergency power source assuring a programmed time interval time for arc extinction during transfer and retransfer;



vertically stacked bus bars for normal and emergency load connections to both of each said molded case switches; and

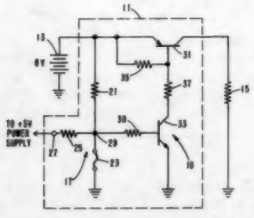
detachable connectors for the load cables for the load circuits mounted at the top of said vertically stacked bus bars facilitating connection to either top or bottom by removal and reattachment at the bottom and thereby facilitating connection of the power conductors.

4,398,098

ELECTRONIC LATCHING CIRCUIT

Jerry M. Minchey, Leesville, S.C., assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 26, 1982, Ser. No. 371,912
Int. Cl.³ H01H *47/00*
U.S. Cl. 307—140 **8 Claims**



8. In an electronic equipment which includes a battery, a load and a power supply, an electronic latching circuit comprising:

a switching circuit having an output circuit connected between the battery and the load and an input circuit, said switching circuit being responsive to a first voltage level applied to said input circuit for electrically isolating the battery from the load and to a second voltage level applied to said input circuit for connecting the battery to the load;

a common junction to which said input circuit is connected;

first and second resistors, said first resistor being connected between the power supply and said common junction;

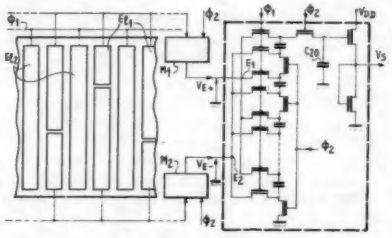
a fuse serially-connected to said second resistor at said common junction, said serially-connected second resistor and fuse being connected across the battery to develop the first voltage level at said common junction until the power supply is initially energized, said fuse being blown by current flow therethrough from the power supply by way of said first resistor when the power supply is initially energized to thereby cause said common junction to rise to the second voltage level to automatically permanently enable said switching means to connect the battery to the load.

4,398,099

SWITCHED-CAPACITANCE AMPLIFIER, A SWITCHED-CAPACITANCE FILTER AND A CHARGE-TRANSFER FILTER COMPRISING AN AMPLIFIER OF THIS TYPE

Roger Benoit-Gonin; Jean-Luc Berger; Jean-Louis Coutures; Daniel Forster, and Jean-Edgar Picquendar, all of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 77,348, Sep. 20, 1979, abandoned. This application May 6, 1982, Ser. No. 375,680
Claims priority, application France, Sep. 26, 1978, 78 27505
Int. Cl.³ H03K *17/56*
U.S. Cl. 307—246 **11 Claims**



1. A charge-transfer filter comprising:

a semiconductor substrate;

an insulating layer deposited on the substrate;

an input for applying charges;

electrodes deposited on the insulating layer and constituted alternately by electrodes which are cut into two portions and which are uncut for ensuring charge transfer in the semiconductor by application of given potentials;

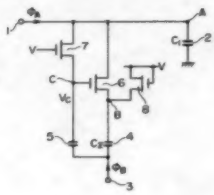
means on said substrate for reading quantities of charges which are present beneath the two portions of the cut electrodes and providing two voltages in accordance with said charges;

a switched capacitance differential amplifier on the substrate which receives the voltages delivered by means for reading and produces the output voltage of the filter; wherein this amplifier is constituted by a voltage multiplier comprising n capacitors, periodically switched in parallel and in series by MOS type transistors operating in the switching mode, a single voltage charging simultaneously the n capacitors only when they are switched in parallel and an amplified voltage being obtained between the end terminals of the n capacitors which are simultaneously switched in series.

4,398,100
BOOSTER CIRCUIT

Youichi Tobita, Itami, Japan, and Hiroshi Nishizawa, deceased, late of Osaka, Japan (by Kazuo Nishizawa, Emiko Nishizawa, heirs), assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1980, Ser. No. 196,980
Claims priority, application Japan, Mar. 14, 1980, 55-32892
Int. Cl.³ H03K 5/01
U.S. Cl. 307—264 10 Claims

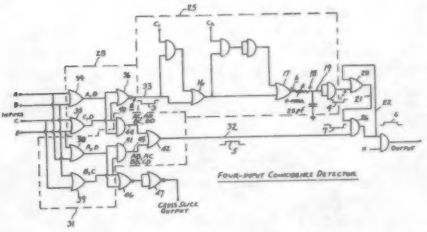


1. A booster circuit comprising: a load capacitor coupled to a terminal to which a signal to be boosted is applied; a boost capacitor to which a boosting signal is applied; and means for coupling said signal to be boosted to said boost capacitor only during boosting periods for said signal to be boosted.

4,398,101
FOUR INPUT COINCIDENCE DETECTOR

Walter S. Friauf, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 6, 1981, Ser. No. 222,936
Int. Cl.³ G01T 1/172; H03K 5/06, 19/21
U.S. Cl. 307—445 14 Claims

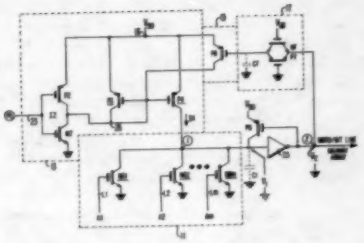


1. A four-input scintillation coincidence detection device comprising four respective input terminals, single-input detection means for detecting the presence of a signal at any one of said four input terminals and for providing a first output signal, an AND gate, a delay circuit, circuit means connecting said first output signal to one input terminal of said AND gate via said delay circuit, whereby to provide a predetermined time delay of said first output signal, multiple-input detection means for detecting the presence of two respective signals at any two of said four input terminals and for providing a second output signal responsive to such last-named two-signal presence, circuit means connecting said second output signal to the remaining input terminal of said AND gate, and means to enable the AND gate to generate a coincidence output signal when said two respective signals are developed within a period shorter in length than said predetermined time delay.

4,398,102
GATED PARALLEL DECODER

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,302
Int. Cl.³ H03K 19/017, 19/094; G11C 8/00
U.S. Cl. 307—449 9 Claims



1. The combination comprising:

a plurality of input signal transistors having their conduction paths connected in parallel between a summing node and a circuit point at a first potential, each one of said transistors when turned-on tending to clamp said summing node to said first potential;

a controllable load means connected between said summing node and a second circuit point at a second potential for providing a conduction path for charging said summing node towards said second potential when enabled and in the absence of an inhibit signal;

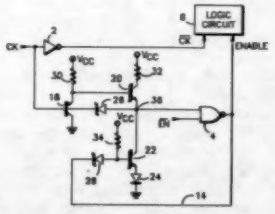
inhibit means, coupled between said summing node and said controllable load means, responsive to the voltage at said summing node for applying an inhibit signal to said controllable means and preventing conduction via said charging conduction path when the potential at said summing node is approximately equal to said second potential; and

means for applying a control signal to said controllable load means for selectively enabling said controllable load means.

4,398,103
ENABLING CIRCUITRY FOR LOGIC CIRCUITS

Edward Derzawiec; Wade H. Nelson, both of Mesa, and Cleon Petty, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 19, 1981, Ser. No. 275,530
Int. Cl.³ H03K 19/20, 3/288
U.S. Cl. 307—454 5 Claims



1. A logic circuit having at least first and second inputs and capable of assuming first and second stable states at an output node thereof when said output node is coupled to a load, said first and second stable states corresponding to logical high and logical low voltages, said output node exhibiting said logical high voltage only when said first input is coupled to said logi-

cal high voltage and said second input is coupled to said logical low voltage, comprising:

first buffer means having an input coupled to said first input and responsive to the first voltage thereon, said first buffer means comprising a PNP transistor having base, emitter and collector terminals, said base coupled to said first input, and said collector adapted to be coupled to a first source of supply voltage; and a first resistor having a first end coupled to the emitter of said PNP transistor and a second end adapted to be coupled to a second source of supply voltage;

first transistor means having base, emitter and collector terminals, for supplying current to said output node only when said first input is coupled to said logical high voltage, said first transistor means comprising a first Schottky transistor having a base coupled to the emitter of said PNP transistor, an emitter coupled to said output node, and a collector; and a second resistor having a first end coupled to the collector of said first Schottky transistor and a second end adapted to be coupled to said second source of supply voltage;

second buffer means coupled to said second input, said second buffer means comprising a Schottky diode having an anode and a cathode coupled to said second input; and

second transistor means having base, emitter and collector terminals for sinking current from said output node only when said second input is coupled to said logical high voltage, said second transistor means comprising; a second Schottky transistor having a base coupled to the anode of said Schottky diode, a collector coupled to said output node, and an emitter adapted to be coupled to said first source of supply voltage; and a third resistor having a first end coupled to the base of said second Schottky transistor and a second end adapted to be coupled to said second source of supply voltage.

5. A circuit for generating an internal enabling signal from an external clock signal and an external enabling signal each capable of assuming high and low logic states, comprising:

a first logic gate having a first input coupled to receive said external clock signal and a second input coupled to receive said internal enabling signal for generating a logical high output when said external clock signal is a logical high and said internal enabling signal is a logical low, said first logic gate capable of assuming first and second stable states at an output node thereof, said first and second states corresponding to logical high and logical low voltage levels, said first logic gate comprising:

first buffer means having an input coupled to said external clock signal;

first transistor means having base, emitter and collector terminals, said base coupled to an output of said first buffer means for controlling said first transistor means, said collector adapted to be coupled to a first source of supply voltage, and said emitter coupled to said output node, said first transistor means for supplying current to said output node only when said external clock signal is a logical high;

second buffer means coupled to receive said internal enabling signal; and

second transistor means having base, emitter and collector terminals, said base coupled to an output of said second buffer means, said collector coupled to said output node and said emitter adapted to be coupled to a second source of supply voltage, said second transistor means for sinking current from said output node only when said internal enabling signal is a logical high;

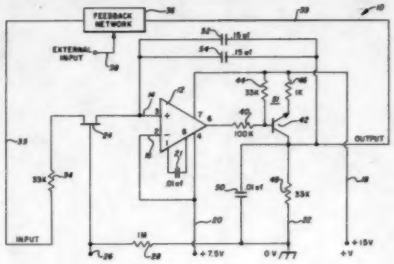
a NOR gate having a first input coupled to the output of said first logic gate and a second input coupled to receive said external enabling signal for generating said internal enabling signal; and

an inverter having an input coupled to receive said external clock signal and having an output for producing an internal inverted clock signal.

4,398,104
LOW DRIFT TUNING CIRCUIT

Robert J. Podhrasky, Dallas, Tex., assignor to Garrett Electronics, Garland, Tex.

Filed Sep. 30, 1980, Ser. No. 192,487
Int. Cl.[3] H03K 5/22; G06G 7/18
U.S. Cl. 307—490 9 Claims



1. A low drift circuit powered by first and second power buses and operated in conjunction with a feedback network, the circuit comprising:

an operational amplifier having positive and negative input terminals for receiving input voltages, an output terminal and first and second power supply terminals connected respectively to said first and second power buses, said negative input terminal connected to said second power bus such that when said input voltages at said positive and negative input terminals are balanced by said feedback network to equal the voltage on said second power bus, said operational amplifier has a common mode input voltage of essentially zero volts,

means for coupling the output of said feedback circuit to said positive input terminal,

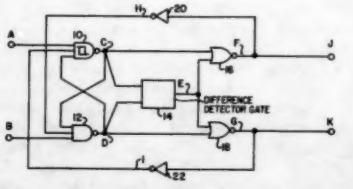
an inverting amplifier having an input terminal and an output terminal, the input terminal thereof connected to the output terminal of said operational amplifier and the output terminal of said inverting amplifier coupled to the input of said feedback network, and

a capacitor connected between the positive input terminal of said operational amplifier and the output terminal of said inverting amplifier for integrating an output signal from said inverting amplifier.

4,398,105
ARBITER CIRCUIT

Philip J. Keller, Fremont, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 22, 1981, Ser. No. 227,514
Int. Cl.[3] H03K 5/26, 3/295, 19/086
U.S. Cl. 307—518 4 Claims



1. An arbiter circuit, comprising:

(a) first and second input terminals and first and second output terminals;

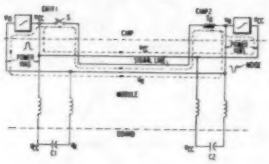
(b) first and second cross-coupled NAND gates coupled to said first and second input terminals, respectively;
(c) a difference detector gate coupled to the outputs of said cross-coupled NAND gates and responsive to a voltage difference exceeding a specified amount;
(d) first and second NOR gates having their outputs coupled to said first and second output terminals, respectively;
(e) means coupling a first input of each of said NOR gates to the output of said difference detector gate, and
(f) means coupling the output of said first NAND gate to a second input of said first NOR gate and coupling the output of said second NAND gate to a second input of said second NOR gate.

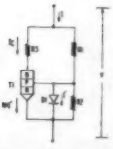
4,398,106

ON-CHIP DELTA-I NOISE CLAMPING CIRCUIT

Evan E. Davidson, Hopewell Junction; George A. Katopis, Fishkill, and Barry J. Rubin, Flushing, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,150
Int. Cl.³ H03H *11/46, 5/12*
U.S. Cl. 307—549 **9 Claims**





1. In a semiconductor structure having a pair of semiconductor chips each having a pair of power leads, one chip defining a driver communicating with a second chip defining a receiver, a module section packaging and inter-connecting said pair of chips, said module section having a signal plane and two reference planes on either side of said signal plane, a pair of power vias disposed under said pair of chips and coupled to each other through decoupling capacitances, the improvement comprising; means coupled between said pair of chip power leads of each chip defining an on-chip impedance characteristic having at least one high impedance region and a low impedance region, for interconnecting the power vias for allowing substantially all module currents to complete current loops on-chip.

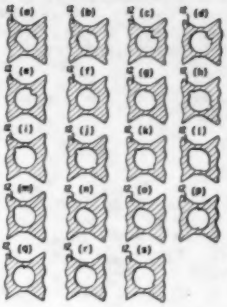
4,398,107

MICRO STEPPING MOTOR

Yasuhiro Fukushima, Ichikawa, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Continuation of Ser. No. 761,437, Jan. 21, 1977, abandoned, which is a division of Ser. No. 556,200, Mar. 6, 1975, abandoned. This application Jun. 13, 1979, Ser. No. 48,187
Claims priority, application Japan, Mar. 7, 1974, 49-26655; Jun. 25, 1974, 49-72509; Jun. 25, 1974, 49-78098; Jul. 8, 1974, 49-80436[U]; Aug. 29, 1974, 49-103672[U]
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R **20 Claims**

1. A micro stepping motor for use in compact electronic timepieces and the like comprising: a magnetic core; a coil winding wound on said magnetic core; a stator having opposite end portions thereof connected to said magnetic core to define therewith a closed magnetic flux path, said stator having a region of reduced cross-sectional area along its length and having a hole extending through said stator at said region defining two stator magnetic poles one on either side of said hole along the stator length with the end faces of said stator magnetic poles defining stator pole faces; a rotor having at least a pair of magnetic poles and being rotatably disposed for



rotation about a given axis in said hole with an air gap between said rotor and stator pole faces; and means defining two recesses in respective ones of said stator magnetic poles at diametrically opposite sites around the circumference of said hole and coacting with said rotor for determining the rotor rest or stationary positions, said recesses opening into and being coterminous with said hole and having a sufficiently small circumferential extent with respect to the remaining hole circumference so as to be ineffective as independent stator pole faces.

4,398,108

STATOR OF A CRYOGENIC ELECTRIC MACHINE

Yanush B. Danilevich, ulitsa Tipanova, 29, kv. 681; Vladimir N. Ostreiko, prospekt Ispytatelei, 20, kv. 598; Jury L. Chernikov, ulitsa Vernosti, 44, korpus 3, kv. 79, and Lidia I. Chubraeva, ulitsa Bestuzhevskaya, 34, kv. 55, all of Leningrad, U.S.S.R.

Filed Feb. 14, 1980, Ser. No. 121,648
Claims priority, application U.S.S.R., Feb. 15, 1979, 2737674
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—54 **6 Claims**

1. An improved stator of a cryogenic electric machine, comprising a housing having outer and inner surfaces, an annular cylindrical cavity being defined by said inner surface of said housing; a winding arranged in said housing; a magnetic circuit arranged in said housing and embracing said winding, said magnetic circuit being defined by an electrically non-conducting ferromagnetic liquid flowing in said annular cylindrical cavity; a cooling system in communication with said annular cylindrical cavity and defining with said annular cylindrical cavity a closed loop for circulation of said ferromagnetic liquid, said electrically non-conducting ferromagnetic liquid being a part of said magnetic circuit and being used as a coolant in said cooling system; and a plurality of axial ribs provided on said inner surface of said housing to prevent rotation of said

ferromagnetic liquid when said ferromagnetic liquid flows along said annular cylindrical cavity.

4,398,109

ELECTRIC MOTOR

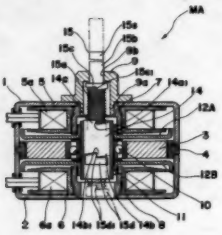
Tomohisa Kuwako, Anjo, and Tosio Tanase, Gifu, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Dec. 29, 1980, Ser. No. 220,724

Claims priority, application Japan, Dec. 29, 1979, 54/181903[U]; Aug. 28, 1980, 55/122619[U]

Int. Cl.³ H02K *7/06*

U.S. Cl. 310—80 **4 Claims**



1. An electric motor comprising: a motor casing; and output shaft member movably mounted in said motor casing for reciprocating rectilinear motion in the direction of the length of said shaft member and being prevented from rotation with respect to said motor casing, said output shaft member having an externally threaded portion on the outer peripheral surface thereof having a single screw thread and extending along a predetermined length thereof; a driving member having an internally threaded portion engaged with said externally threaded portion of said output shaft member; and a rotor connected with said driving member; a magnet means and exciting coils for the electric motor positioned in said casing for rotating said rotor; said output shaft member having first stop portions at opposite end portions of the externally threaded portion thereof and each having a stepped portion with a peripherally facing stop surface, and said driving member having corresponding second stop portions at opposite end portions thereof, and each having a stepped portion with a peripherally facing stop surface engageable with said stop surface on said first stop portions, and said first and second stop portions contacting each other at said peripherally facing stop surfaces thereof for avoiding contact of the confronting surfaces of said first and second stop portions which extend perpendicular to the axis of said output shaft member.

4,398,110

HARMONIC ELECTRIC ACTUATOR

David E. Flinchbaugh, Orlando, Fla.; Raymond R. Hill, Danville, Va.; Robert Shaffer, Swissvale, and Thomas R. Wagner, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 5, 1982, Ser. No. 375,247

Int. Cl.³ B25J *3/00*

U.S. Cl. 310—83 **10 Claims**

1. An electric actuator comprising:

a first housing;

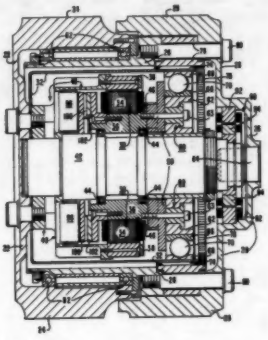
a stationary shaft disposed in and attached to said first housing;

a cylindrical thin walled deep cup harmonic drive member partially disposed in and attached to said first housing and disposed around said shaft, said deep cup harmonic drive member having one closed end and one open end with a plurality of first teeth disposed around the outside circumference of said open end;

a stator assembly disposed in said deep cup harmonic drive member attached to said first housing and mounted on said shaft;

a rotor assembly rotatably disposed on said shaft and within said stator assembly with said stator assembly and said rotor assembly establishing an electromotive force for rotating said rotor assembly around said shaft;

a harmonic drive mechanism connected to said rotor assembly, disposed around said shaft, and disposed in said deep cup harmonic drive member and in contact with said deep cup harmonic drive member near said first teeth;



an outer ring having a set of second teeth along the inside circumference thereof and disposed around said deep cup harmonic drive member such that said second teeth are capable of contacting said first teeth thereby driving said outer ring around said shaft; and

a second housing attached to said outer ring and rotatably connected to said shaft for being rotated relative to said first housing by said outer ring.

4,398,111

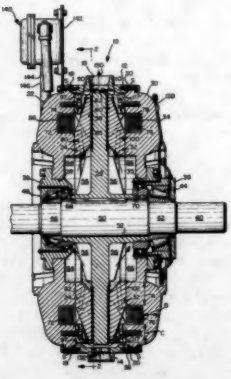
EDDY CURRENT BRAKE

Howard W. Zuch, Sugarland, Tex., assignor to Baylor Company, Sugarland, Tex.

Filed Mar. 11, 1982, Ser. No. 357,096

Int. Cl.³ H02K *49/02*

U.S. Cl. 310—93 **13 Claims**



1. An eddy current brake, comprising:

(a) a closed hollow housing which is relatively thin along its transverse axis and has a generally circular shape along its

longitudinal axis and including a relatively flat disc-shaped end cap member constituting each side thereof,

(b) a disc-shaped rotor centrally disposed within the housing and having two flat annular side faces adjacent the periphery thereof and which is mounted on a shaft extending transversely thereto and along the transverse central axis of the housing,

(c) a magnetic pole assembly including a set of interdigitated spaced circularly arranged poles which are disposed within the housing and in the same plane on each side of the rotor adjacent each flat annular side face adjacent the periphery thereof, each adjacent pole being of opposite polarity,

(d) a circular magnetic coil supported within the housing on each end cap member immediately adjacent each set of spaced circularly arranged poles and in connection therewith through a metal connecting flux path in the end cap member, and

(e) the housing having means for permitting coolant fluid flow into the housing at the periphery of the rotor and through the housing to remove generated heat.

4,398,112

AMINATED WINDING FOR ELECTRIC MACHINES

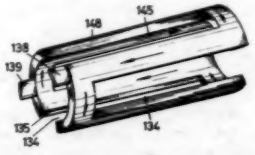
Adrianus W. van Gils, Jacob Pronkstraat 2A,, Den Haag, Netherlands

Division of Ser. No. 961,865, Nov. 20, 1978, Pat. No. 4,319,152, which is a continuation of Ser. No. 711,556, Aug. 4, 1976, abandoned. This application Dec. 17, 1980, Ser. No. 217,218

Claims priority, application Netherlands, Jul. 12, 1976, 7607705

Int. Cl.³ H02K *3/04*

U.S. Cl. 310—201 **5 Claims**



1. A plurality of laminated windings for an electric machine, each of said laminated windings comprising a cylindrically formed roll of conductive strip-like material isolate on one side and having a cylindrical surface concentric about a cylindrical axis, said cylindrically formed roll having axial slots formed in the cylindrical surface alternatively starting from one roll end and from another roll end, respectively, and extending nearly up to the respective opposite roll end, leaving a circumferential roll portion and forming a laminated winding with three quarter windings, said laminated winding further comprising electrical terminal means connected to said laminated winding with three quarter windings for supplying an electrical current therethrough, said electric machine comprising a rotating electric machine, a first one of said laminated windings being arranged as a rotor, and a second one of said laminated windings being arranged as a stator.

4,398,113

FIBER BRUSH SLIP RING ASSEMBLY

Norris E. Lewis, and Jean A. Skiles, both of Christiansburg, Va., assignors to Litton Systems, Inc., Blacksburg, Va.

Filed Dec. 15, 1980, Ser. No. 216,133

Int. Cl.³ H01R *39/08*

U.S. Cl. 310—232 **6 Claims**

1. A slip ring and brush assembly for transmitting electrical energy between a stationary conductor and a rotating shaft, the assembly comprising:

a gold plated slip ring surface on the rotating shaft,

a fiber brush in contact with said gold plated slip ring surface and coupled to the stationary conductor, the fibers of said brush each being from 1 to 3 mils in diameter and being maintained in a bundle of between 20 and 10,000 fibers by a collar located on said bundle at a point spaced from the fiber ends,

a brush holder for maintaining said fiber brush in contact with said gold plated slip ring, said brush holder biasing said brush against said slip ring surface,

said gold plated slip ring surface having a hardness which is less than the hardness of the fibers of said brush, whereby during use gold is transferred from the gold plated slip ring surface to the regions of the fibers in actual contact with the slip ring, whereby said slip ring and brush assembly will withstand at least 20 million inches of ring travel and is capable of transmitting current in excess of 7,000 amps per square inch without lubrication between ring and brush.

4,398,114

SURFACE-ACOUSTIC-WAVE PARAMETRIC DEVICE

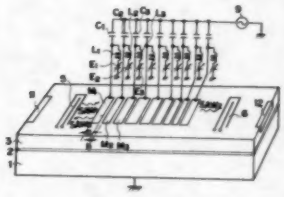
Shoichi Minagawa, and Takeshi Okamoto, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1980, Ser. No. 218,379

Claims priority, application Japan, Dec. 24, 1979, 54-166928; Dec. 26, 1979, 54-168089

Int. Cl.³ H03H *9/64;* **H01L** *27/20*

U.S. Cl. 310—313 R **19 Claims**



1. A surface-acoustic-wave parametric device which comprises:

a laminate which includes a semiconductor layer and a piezoelectric layer;

means for propagating a surface acoustic wave along a path in said laminate;

a plurality of spaced pumping electrodes provided along said surface-acoustic-wave propagating path in said laminate;

means for applying pumping voltages to said pumping electrodes; and

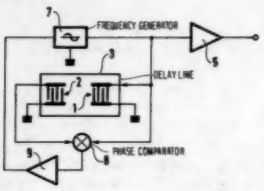
means for applying DC bias voltages of different, predetermined values to respective said pumping electrodes, said DC bias voltage values being selected so that an output frequency characteristic of said device corresponds to the impulse response thereof.

4,398,115

TEMPERATURE PROBE USING A PLATE OF QUARTZ

Jean-Jacques Gagnepain, Recologne; Daniel Hauden, Besancon; Roger Coquerel, Recologne, and Claude Pegeot, Sartrouville, all of France, assignors to Quartz et Electronique and Centre National de la Recherche Scientifique (CNRS), both of Paris, France

Filed May 21, 1981, Ser. No. 265,928
Claims priority, application France, May 23, 1980, 80 11509
Int. Cl.³ H01L *41/08*; H03H *9/25*
U.S. Cl. 310—313 A **2 Claims**



1. A temperature probe comprising a surface acoustic wave propagation device used in a frequency generator device, said surface acoustic wave propagation device having a characteristic frequency which varies in accordance with the temperature and being composed of a doubly rotated quartz cutting plate defined by:

yxwl: 9°24' to 13°24'/57°24' to 61°24'

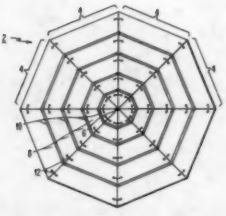
the surface wave being propagated on a large surface of the plate in accordance with a direction making an angle of between 33° and 37° with the axis of second rotation.

4,398,116

TRANSDUCER FOR ELECTRONIC FOCAL SCANNING IN AN ULTRASOUND IMAGING DEVICE

George K. Lewis, San Jose, Calif., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Apr. 30, 1981, Ser. No. 258,883
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—334 **14 Claims**



1. An ultrasound transducer for electronic focal scanning comprising:

(a) a plurality of adjacently positioned piezoelectric segments arranged concentrically,

(b) each of said segments containing a plurality of individual, linear parallel grooves,

(c) said individual grooves in each segment defining spaced surface areas therebetween, and each of said surface areas comprising respectively a piezoelectric element, and

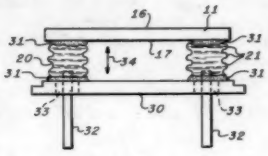
(d) said individual grooves in the concentric arrangement of said segments form concentric polyhedral grooves which are approximately annular and acoustically decouple said piezoelectric elements from each other, which piezoelectric elements thereby forming polygons which approximate a ring form.

4,398,117

BELLOWS SUPPORT FOR SURFACE ACOUSTIC WAVE DEVICE

Raymond A. St. Cyr, Salem, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,464
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—348 **14 Claims**



1. An improved surface acoustic wave device of the type having an acoustic substrate and a base wherein the improvement comprises:

bellows shaped mounting means disposed between said substrate and said base for providing multidirectional deflection movement;

first means for attaching said bellows means to said substrate; and

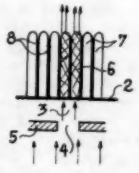
second means for attaching said bellows means to said base.

4,398,118

X-RAY IMAGE INTENSIFIER

Jean-Pierre Galves, Paris, and Jean-Marie Gutierrez, Antibes, both of France, assignors to Thomson - CSF, Paris, France

Continuation of Ser. No. 76,039, Sep. 17, 1979, Pat. No. 4,287,230, which is a continuation of Ser. No. 821,217, Aug. 2, 1977, abandoned. This application Apr. 29, 1981, Ser. No. 258,731
Claims priority, application France, Aug. 3, 1976, 76 23726
Int. Cl.³ H01J *1/62*
U.S. Cl. 313—527 **10 Claims**



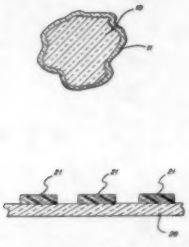
1. A scintillator screen for an X-ray image intensifier consisting of a scintillator screen with which a photocathode is associated, an electron-optical system, and an output screen on which the visible image appears, wherein the scintillator is formed by a substrate on which is vapor condensation and separately deposited a composite layer of cesium iodide doped with sodium and a different material consisting of an oxide introduced into the crystal lattice of the cesium iodide, said layer having thereby a structure of fine needles that are substantially parallel to and optically independent from one another.

4,398,119

COATED PHOSPHOR PARTICLES, METHOD, AND CATHODE RAY TUBE SCREEN

Robert E. Dodds, San Diego, Calif., and David J. Harrigan, Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 19, 1980, Ser. No. 188,634
Int. Cl.³ H01J *29/10*
U.S. Cl. 313—466 **10 Claims**



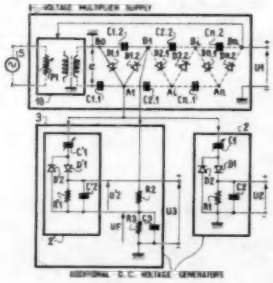
6. An article of manufacture comprising a cathode ray tube faceplate and an array of elemental areas on the faceplate, the areas comprising coated particles of a cathode ray phosphor distributed in a matrix of a photoresist, characterized in that the particle coating comprises a vapor deposited layer of a color modifying material.

4,398,120

DIRECT CURRENT SUPPLY PARTICULARLY FOR CATHODE RAY TUBE

Jean Pierre Guillon, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 10, 1981, Ser. No. 252,808
Claims priority, application France, Apr. 14, 1980, 80 08273
Int. Cl.³ H01J *29/98*; H02M *3/18*; H02P *13/00*
U.S. Cl. 315—1 **6 Claims**



1. A direct current supply of the voltage multiplier type comprising:

a plurality 2 n of capacitors and a plurality 2 n of rectifiers for supplying n cascade-connected voltage doubler stages and a first d.c. voltage whose value is substantially equal to 2 n times the peak value of an a.c. voltage applied to the input;

means for the regulation and control of the first voltage produced between the output terminal of the final stage and a terminal connected to the reference potential; and

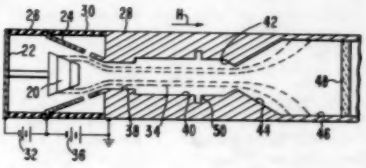
at least one generator circuit for generating a second stabilized d.c. voltage formed from a first capacitor connected by a first end to the connecting point of the two rectifiers of a doubler stage and by its second end respectively to the input of a first rectifier and to the output of a second rectifier, said first capacitor being formed by an adjustable capacitor for varying the current provided from said connection point and therefore said second voltage, said first and second rectifiers being connected by their other end to the reference potential, said connection being in the case of one of them across a resistor connected in parallel with a second capacitor, the second voltage being taken at the terminals of the second capacitor.

4,398,121

MODE SUPPRESSION MEANS FOR GYROTRON CAVITIES

Marvin Chodorow, Stanford, and Robert S. Symons, Los Altos, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 5, 1981, Ser. No. 232,059
Int. Cl.³ H01J *25/00*
U.S. Cl. 315—4 **4 Claims**



1. In a gyrotron:

means for forming a beam of spiraling charged particles,

a hollow conducting cavity shaped to resonate in a mode with circular electric field,

an end of said cavity comprising an opening for passage of said beam,

an end of said cavity comprising an opening connecting to a circular waveguide capable of transmitting a wave having a circular electric field, the improvement being

a groove in the wall of said cavity, said groove running parallel to said electric field of said mode, the walls of said groove having low resistive loss and the interior of said groove having low dielectric loss,

whereby field patterns of modes with non-circular electric fields are perturbed with only a small dissipation of their energy.

4,398,122

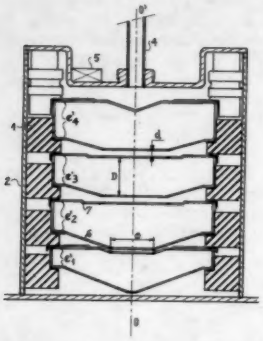
MULTISTAGE DEPRESSED COLLECTOR FOR MICROWAVE TUBE

Philippe Gosset, Jouy-en-Josas, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 14, 1981, Ser. No. 254,128
Claims priority, application France, Apr. 15, 1980, 80 08392
Int. Cl.³ H01J *23/02*
U.S. Cl. 315—5.38 **4 Claims**

1. A multistage depressed collector for a microwave tube, comprising a plurality of electrodes positioned along the path of the electron beam of the tube and which are axially symmetrical with respect to the propagation axis (00') of the beam and which are raised to decreasing potentials, each electrode being formed of two walls which are separated along the propagation axis and each wall having an opening permitting the passage of the beam of electrons, and wherein the distance separating the facing walls of two adjacent electrodes is substantially no greater than required to prevent any arcing over between said two adjacent electrodes and the diameter of the

opening in each of the walls of each electrode is substantially smaller than the distance separating the two walls of the said



electrode and substantially no greater than required to permit the passage of the beam of electrons.

4,398,123

HIGH PRESSURE DISCHARGE LAMP

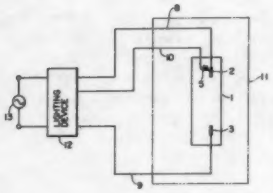
Michihiro Tsuchihashi; Ryo Suzuki; Masato Saito, and Heiji Watanabe, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 235,406, Feb. 18, 1981, abandoned. This application Dec. 15, 1982, Ser. No. 450,151

Claims priority, application Japan, Feb. 20, 1980, 55-20126; Feb. 29, 1980, 55-25824; Feb. 29, 1980, 55-25826; May 26, 1980, 55-69739; May 29, 1980, 55-72008

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—46 **43 Claims**



1. In a method for operating a high pressure discharge lamp comprising a transparent tube in which at least mercury is sealed and in which the quantity of mercury in said tube if sufficient to provide a vapor pressure of mercury in said lamp of at least 100 Torr immediately as said lamp has been switched off after operating in a steady state and is still hot, and a pair of electrodes disposed in said tube, the improvement comprising, heating at least of said electrodes for re-starting said lamp at least when said lamp is hot.

4,398,124

ELECTRIC LAMP UNIT WITH IMPROVED FUSE MEANS

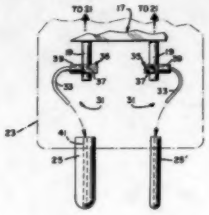
Clyde B. Kohl, Winchester, and Raymond T. Fleming, Lexington, both of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 9, 1981, Ser. No. 319,344

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—74 **9 Claims**

1. In an electric lamp unit including an electric lamp having an envelope with a filament therein, at least one sealed end portion, and at least one electrically conductive lead-in wire projecting from said sealed end portion, an insulative base member including at least one electrically conductive pin projecting therefrom, said sealed end portion of said electric lamp being affixed to said base member, and fuse means located substantially within said base member and electrically interconnecting said lead-in wire and conductive pin for preventing the formation of a destructive arc when said filament within said lamp envelope fails, the improvement wherein said fuse means comprises:



a conductive wire segment; and

a conductive sleeve member crimped about an end portion of said wire segment and including a crimped substantially flat region and a substantially cylindrical region adjacent said flat region, said sleeve member fixedly secured to said lead-in wire at said crimped flat region.

4,398,125

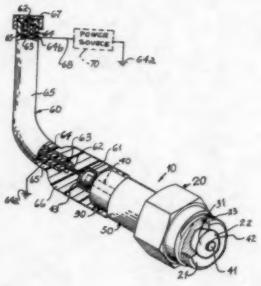
FORCE FIELD ANTI-NOISE-INDUCTION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed Oct. 29, 1981, Ser. No. 316,542

Int. Cl.³ H05B *37/00, 41/14*

U.S. Cl. 315—86 **11 Claims**



1. An electrical ignition system for a fuel burning engine, said system having at least one high voltage ignition cable with an axial conductor connected to an axial electrode of an igniter, the improvement comprising the combination of:

electrical conductive means, circumjacent to and integral with said cable and electrically insulated from said axial conductor, for enabling an electrical current to be passed therethrough; and

electrical power means, connected to said electrical conductive means, for producing a force field surrounding said axial conductor, said force field confining an electromagnetic field produced during firing of said igniter.

4,398,126

PROTECTED LOW-PRESSURE DISCHARGE LAMP OPERATING CIRCUIT

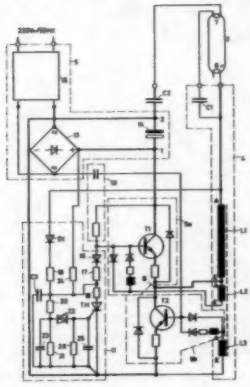
Anton Zachtriegel, Taufkirchen, Fed. Rep. of Germany, assignor to Patent-Truehand-Gesellschaft fur Elektrische Gluhlampen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,784

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3112499

Int. Cl.³ H01T *13/02*

U.S. Cl. 315—127 14 Claims



1. Protected low-pressure discharge lamp operating circuit, particularly for connection to at least one discharge lamp (3, 3') having

connection means (1, 2) for connection to a d-c source;

an oscillatory circuit including

a ballast inductance (L1, L1') and a capacitor (C1, C1') connected to the at least one lamp, the ballast inductance and the capacitor being interconnected and forming at least one series resonance circuit (4,4') coupled to the respective at least one lamp,

and two serially connected transistors (T1, T2) of the same conductivity type, connected across the d-c source, and further coupled to said resonance circuit (4,4') to form an oscillatory circuit therewith;

and a high-voltage disconnect safety circuit (11) including a controlled switching element (TH) connected to at least one of the transistors (T1) in a circuit to block conduction of said at least one transistor upon conduction of said switching element,

wherein, in accordance with the invention,

means are provided to deliver operating energy to said switching element (TH) for rendering said switching element conductive when an excessively high voltage is sensed in said circuit, comprising

a capaictor (C3);

and a rectifier (D1, D1') connected to the at least one ballast inductance (L1,L1') in the series resonance circuit at a high-tension terminal thereof to derive power from the inductance and provide rectified electrical energy to charge the capacitor (C3) and store said operating energy therein.

4,398,127

ELECTRIC FLASH LAMP UNIT WITH A LIGHT CONTROLLING CIRCUIT

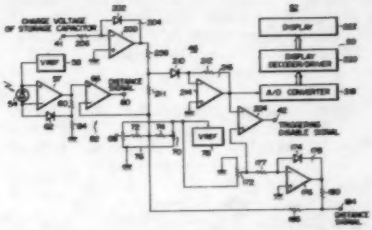
Itsuki Bahn, Higashioizumi, and Tadao Miyata, Tokyo, both of Japan, assignors to Secoh Giken, Inc., Tokyo, Japan

Filed Feb. 18, 1981, Ser. No. 235,631

Claims priority, application Japan, Feb. 18, 1980, 55-17854

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—151 27 Claims



1. A flash terminating signal generating circuit comprising:

means for generating clock pulses;

means for counting the clock pulses in response to a flash starting signal;

memory means for storing a plurality of time data corresponding to a flash time of an electric flash lamp in a plurality of memory locations with corresponding addresses;

means for converting distance information into a first address data, supplying the first address data to said memory means, thus designating one of the addresses of said memory means, and reading a respective time data from the memory location thus designated; and

comparing means for comparing the time data read from said memory means with the contents of said counting means and producing a flash terminating signal when both the time data read from said memory means and the contents of said counting means are coincident with each other.

4,398,128

METHOD AND CIRCUIT ARRANGEMENT FOR HEATING AND IGNITING AS WELL AS CONTROLLING OR REGULATING THE LIGHT FLUX OF LOW-PRESSURE GAS-DISCHARGE LAMPS

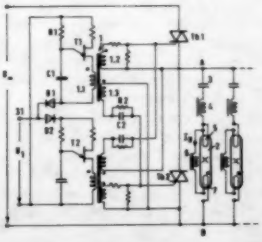
Gerhard Wollank, Brühl-Heide, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,747

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 3101568

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—158 18 Claims



1. Method for heating and igniting as well as controlling or

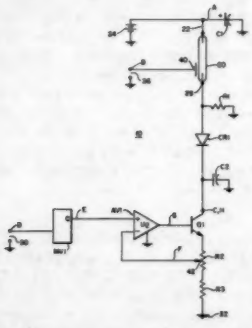
regulating the light flux of low-pressure gas-discharge lamps, including a ballast having an inverter for generating an ac voltage at inverter output terminals from a dc voltage generated from an ac supply network by rectifiers, the ac voltage having a frequency higher than line frequency, the ballast including an L-C circuit having a capacitor and a first choke connected between one of the inverter output terminals and a lamp, the lamp being in turn connected to another of the inverter output terminals, a second choke shunted across the lamp, the charge of the capacitor being constantly reversed by the inverter with controllable frequency, which comprises changing the inverter frequency in accordance with the desired light flux with constant ac voltage amplitude at the outputs of the inverter, tuning the frequency, voltage, capacitor, first choke and second choke to each other, circulating substantially the required heating current through heating coils of the lamp at low frequency before the lamp is ignited, decreasing the heating current at rising frequency until substantially 40% of the rated light flux of the lamp is reached after the lamp is ignited, and decreasing the heating current to less than 25% of its initial value as the frequency continues to rise until the rated light flux of the lamp is reached.

4,398,129

ACTIVE LAMP PULSE DRIVER CIRCUIT

Kenyon E. Logan, Longwood, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 24, 1981, Ser. No. 276,748
Int. Cl.³ H05B *41/14*
U.S. Cl. 315—208 **17 Claims**



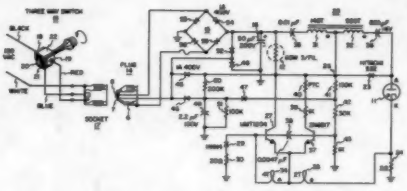
1. A circuit for driving a gaseous flashlamp, comprising:
circuit switching means;
means generating an output for varying said circuit switching means between two operation modes;
means for applying a potential impulse to a first terminal connectable to one electrode of the flashlamp to initiate ionization thereof;
energy supply means for applying a first potential continuously and directly to a second terminal connectable to a second electrode of the flashlamp, said first potential having sufficient magnitude to maintain partial ionization in the flashlamp when said circuit switching means is in one of its operational modes;
energy storage means exhibiting a single and capacitive reactive impedance component chargeable by said energy supply means for applying a second potential directly to said second terminal of a magnitude sufficient to effect complete ionization of the flashlamp when said circuit switching means is in the other of its operational modes; and
means for providing a signal to said varying means proportional to the amplitude of current flowing through said flashlamp during said other operational mode in response to reception of said signal, whereby said circuit switching means controls the amplitude of electrical current flowing through said second electrode caused by potential applied by said energy storage means to said second terminal during the period of said other mode.

4,398,130

ARC LAMP LIGHTING UNIT WITH LOW AND HIGH LIGHT LEVELS

Robert J. McFadyen; William Peil, both of Syracuse, N.Y.; John M. Davenport, Lyndhurst, and Robert J. Crosby, Wickliffe, both of Ohio, assignors to General Electric Company, Syracuse, N.Y.

Continuation of Ser. No. 107,698, Dec. 27, 1979, abandoned.
This application Mar. 8, 1982, Ser. No. 355,658
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—226 **6 Claims**



1. A lighting unit having low and high illumination levels for connection to a two thermal ac supply by means of a three terminal power switching supply socket, the first ac supply terminal not being switched, comprising:
A. a plug having first, second and third terminals, the second plug terminal being for connection to said first ac supply terminal, the switching of the first and/or third plug terminal(s) into connection with the second ac supply terminal selecting the illumination level,
B. a rectifier bridge having first and second ac input terminals and first, negative, and second, positive, dc output terminals, the bridge first input terminal being connected to said first plug terminal, and the bridge second input terminal being connected to said second plug terminal,
C. a first filter capacitor connected between said bridge output terminals,
D. a main arc lamp for providing high level illumination,
E. an operating network for said arc lamp
(1) comprising the following elements:
an incandescible resistive filament for providing low level illumination,
an electrical transformer having a first and a second winding mutually coupled to said first winding for deriving a stepped-up output voltage,
a solid state switch,
a first diode, and
control means for effecting intermittent operation or nonconduction of said solid state switch, responsive to said selected illumination level and lamp conditions,
(2) said elements being interconnected as follows:
said filament is connected in a first branch between said second bridge output terminal and a node,
said first diode and said second winding are connected in parallel, the parallel combination being connected in series with said arc lamp in a second branch between said node and said first bridge output terminal,
said switch is connected in a third branch between said node and said first bridge output terminal,
said first winding is connected in a fourth branch between said second bridge output terminal and said node to
(3) function as follows:
when said solid state switch is intermittently operated,

said first third and fourth branches conduct current for energizing said filament and producing an alternating potential in said first winding, inducing a stepped-up ignition potential in said second winding, which is coupled to said lamp, and rectified by said diode,

when said solid state switch is nonconductive, said first and second branches ballast and conduct current from said rectifier bridge and filter capacitor for energizing said lamp for normal running operation; and

said control means in said high illumination level, maintaining said solid state switch in intermittent operation until said lamp has started and in said non-conducting state thereafter; and in said low illumination, maintaining said solid state switch in a nonconductive state; and

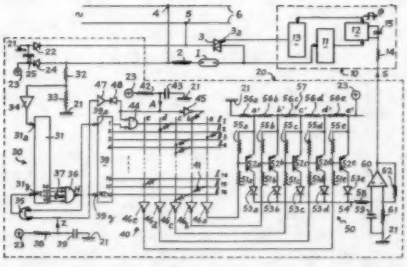
F. a rectifier device having its anode coupled to said node and its cathode coupled to said third plug terminal for half-wave conduction through said filament and a portion of said rectifier bridge to said second bridge input terminal for providing filamentary illumination in said low illumination level.

4,398,131

DEVICE FOR CONTROLLING THE VARIATIONS IN TIME OF THE POWER OF A LIGHTING INSTALLATION IN RELATION TO A PRESET PROGRAMME

Pierre Tarroux, Paris, and Jacques Le Pochard, Belleville sur Saone, both of France, assignors to Elam Limited, Dublin, Ireland

Filed Mar. 19, 1981, Ser. No. 245,253
Claims priority, application France, Mar. 28, 1980, 80 07087
Int. Cl.³ H05B *37/02, 39/04, 41/18*
U.S. Cl. 315—294 **8 Claims**



1. In a lighting installation comprising a plurality of light sources connected to an A.C. power supply system, control means for controlling the variation with respect to time of the power of illumination of said installation, said control means comprising, associated to each light source:

a clock circuit delivering clock signals at predetermined time intervals;

reset means connected to said power supply system and to said clock circuit for resetting the clock circuit in response to the switching on of the power supply system;

circuit means having stored therein in a non-volatile form a predetermined illuminating programme representing a desired step-wise variation of the illuminating power of said light source over a working period of the lighting installation;

selection means connection to said clock circuit and programme circuit means and including counting means for counting said clock signals;

control signal generating means connected to said programme circuit means for generating a control signal having a magnitude which varies in a step-wise manner and is representative of a value selected in said programme circuit means as a function of the number of clock signals counted by said counting means;

means connected to said control signal generating means for varying progressively the magnitude of the control signal from one step to another;

a switching circuit connected between a terminal of said power supply system and the light source; and

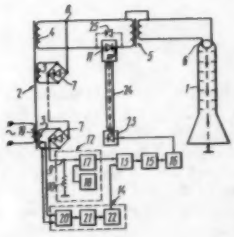
a control circuit connected to said switching circuit and responsive to said control signal for controlling the closing of the switching circuit during a fraction of each alternation of the power system voltage, said fraction having a duration which is a function of the magnitude of the control signal.

4,398,132

ELECTRON BEAM CURRENT STABILIZING DEVICE

Gennady I. Razin, Kirovsky prospekt, 44/16, kv. 18, and Stanislav P. Dmitriev, ulitsa Michurinskaya, 19, kv. 23, both of Leningrad, U.S.S.R.

PCT No. PCT/SU79/00133, § 371 Date Aug. 5, 1981, § 102(e) Date Aug. 5, 1981, PCT Pub. No. WO81/01937, PCT Pub. Date Jul. 9, 1981
PCT Filed Dec. 26, 1979, Ser. No. 290,801
Int. Cl.³ H05B *7/148*
U.S. Cl. 315—307 **4 Claims**



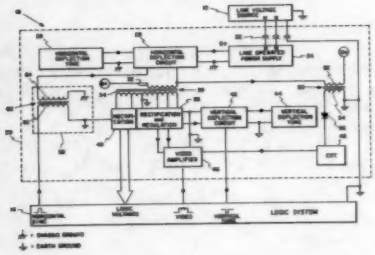
1. An electron beam current stabilizing device for use with an accelerating tube having a heater cathode connected to a heater transformer supplied from one of the secondary windings of a high-voltage transformer of an acceleration voltage source, said device comprising a photosensitive element connected to the cathode of the accelerating tube to adjust the beam current, and a light source to control the photosensitive element, characterized in that it further comprises a sensing element (12) responsive to the beam current deviation from the predetermined value, a saw-tooth voltage shaper (14) connected to the high-voltage transformer (2) and providing periodic saw-tooth voltage, smoothly sloping portions thereof being shaped starting from the moment when the voltage at the high-voltage transformer (2) crosses zero an adder (13) whose one input is connected to the output of the sensing element (12) and whose other input is connected to the output of the saw-tooth voltage shaper (14), a threshold element (15) connected to the output of the adder (13), and a differentiator (16) connected to the output of the threshold element (15) to shape the electric driving pulses when the smoothly sloping portions of the saw-tooth voltage cross the threshold level of the threshold element (15) at the output of the adder (13), the light source being connected to the output of the differentiator (16) to convert the electric driving pulses into the light pulses while, the photosensitive element is made as a photothyristor (11) inserted in the primary winding circuit of the heater transformer (5).

4,398,133

HIGH FREQUENCY COMPUTER TERMINAL POWER SUPPLY WITH ISOLATION

Gregory J. Beaumont, Arlington Heights; Theodore J. Godawski, Des Plaines; James P. McShane, Chicago, and James J. Parker, Elmhurst, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 26, 1981, Ser. No. 228,410
Int. Cl.³ H01J 29/70
U.S. Cl. 315—411 9 Claims



1. In a computer terminal including a video display, said video display including high voltage horizontal and low voltage vertical deflection systems for the scan and retrace of an electron beam across a faceplate of a cathode ray tube in said video display and a video amplifier for controlling the video level of an image displayed on said cathode ray tube, and logic means energized by a plurality of low voltage DC signals and coupled to said video amplifier for providing video information thereto for display on said cathode ray tube and to said horizontal and vertical deflection systems for synchronizing electron beam sweep across the faceplate of said cathode ray tube with said video information, a power supply energized directly by a high voltage AC line source for providing a plurality of said low voltage DC signals from said common AC line voltage source to said logic means while isolating said logic means from said high voltage line source comprising:

first rectification and regulation means coupled to said AC line voltage source to produce a regulated DC high B+ voltage and coupled to said horizontal deflection system for providing said B+ voltage thereto;

first transformer means having a high voltage primary winding coupled inductively to a plurality of low voltage secondary windings, said primary winding energized by said B+ voltage and coupled to said horizontal deflection system for receiving deflection signals therefrom;

said rectification and regulation means coupled to said secondary windings to produce a direct voltage signal from the signals induced on each of said secondary coils by said primary coil and coupled to said logic means, said vertical deflection system and said video amplifier; and

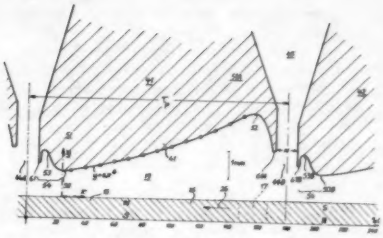
second transformer means having a low voltage primary winding coupled to said logic means for receiving horizontal synchronization signals therefrom and a high voltage secondary winding inductively coupled to said primary winding and connected to said horizontal deflection system for providing said horizontal synchronization signals thereto.

4,398,134

TWO-PULSE PERMANENT MAGNET BRUSHLESS D-C MOTOR

Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,144
Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919581
Int. Cl.³ H02K 29/02
U.S. Cl. 318—254 24 Claims



1. Two-pulse brushless direct current (d-c) motor having

an essentially cylindrical permanent magnet rotor element (11, 16) having approximately trapezoidal magnetization with narrow gaps (17) between the poles thereof;

a stator element having a core (18), salient poles terminating in pole shoes (41–44) extending from the core, the tips of adjacent pole shoes being separated by pole gaps (44; 44A, 44B), and winding means (23, 25) on the poles positioned beneath the pole shoes;

an essentially cylindrical air gap (19) separating said rotor element and said stator element;

means (37) controlling current flow, in pulses, through respective winding means on the poles to produce, in operation, an alternating magnetic field to generate an electromagnetic driving torque in the rotor elements,

said stator element pole shoes (41–44) being shaped, in the direction of rotation of the rotor element, to define magnetically effective air gap dimensions which increase and decrease over the angular range of the pole shoes and further to provide, in the region of the pole gaps (44),

compensating means to compensate for torque variations due to the presence of the pole gaps, the pulsed current flow through said winding means being controlled by said current flow control means (37) to energize a winding means when a rotor pole gap passes through a zone of magnetically effective decreasing air gap, while a pulse gap is controlled to occur when the rotor pole gap passes through a zone of magnetically effective increasing air gap;

and wherein, in accordance with the invention,

starting from a region (51A) just inwardly of a first pole tip (61A) adjacent a pole gap (44B)—with respect to the angular circumference of the pole shoe (41)—the air gap (19) is a maximum (52) and said air gap then decreases over a major portion of the pole shoe to a minimum (50) located inwardly of, and close to the other pole tip (61), and then increases again throughout a zone (54) towards said other pole tip (61) to an intermediate value (53).

4,398,135

WINDSHIELD WIPER ELECTRIC DRIVE UNIT

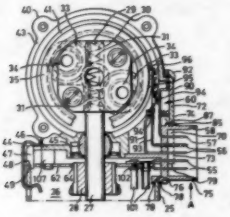
Gerhard Busch, Besigheim; Heinz Jakob, Bietigheim-Bissingen; Reiner Jendrzejewski, Murr; Heribert Klement; Hans Prohaska, both of Bietigheim-Bissingen; Eckhardt Schmid, Brackenheim, and Theodor Schneider, Freudental, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed May 18, 1981, Ser. No. 264,664

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3021948

Int. Cl.³ H01R *39/58;* **H07K** *15/00*

U.S. Cl. 318—443 **4 Claims**



1. An electric drive unit for use with windshield wipers of a motor vehicle, comprising: an electric motor with a brush holder plate accomodated in a cup-shaped housing, a gear housing closing a front face of the drive unit by means of an end shield, and a plug housing in which the plugs which are connected in an electrically conductive manner with the switch contacts of a limit switch and the brushes of the electric motor are secured, wherein the plug housing (**58**) and the brush holder plate (**62**) are one unitary unit, wherein the jacket (**43**) of the gear housng (**40**) has an opening (**70**) in which the plug housing (**58**) is received, wherein the end shield (**44**) has a rimless recess opening towards the motor housing (**25**) through which the plug housing and brush holder plate are mounted in the gear housing (**40**) and therein interconnected and means for mounting the motor housing (**25**) to the end shield (**44**) and against the plug housing (**58**) whereby the unitary unit is secured between the motor housing (**25**) and gear housing (**40**).

4,398,136

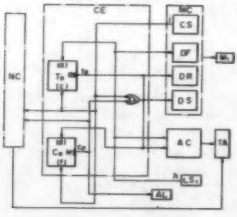
CONTROLLER FOR AUTOMATIC TOOL CHANGER

Hiroaki Tanaka, Hamamatsu, Japan, assignor to Enshu Limited, Japan

Filed Dec. 22, 1981, Ser. No. 333,377

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **4 Claims**



1. A chucking repeat controller used for a work machine having a main spindle adapted for chucking a tool, a drive motor for said main spindle, a transfer arm assembly for replacing one tool on said main spindle with another tool reserved at a given stand-by position by its horizontal turning and vertical reciprocation, and a numerical control device for controlling operation of said transfer arm assembly according to a given programme, comprising:

a limit switch arranged at a check point position right below said main spindle and generative of a chucking start signal every time said transfer arm assembly arrives at said check point position,

a motor control circuit connected to said drive motor and including a current sensor which is attached to said drive motor and generative of a chucking complete signal upon defection of success in each chucking operation by said main spindle,

an arm control circuit connected to said transfer arm assembly in order to control movement thereof between said main spindle and said check point position, and

a chucking repeat circuit connected to said numerical control device, said limit switch, said motor control circuit and said arm control circuit, and including a timer and a chucking repeat fixer connected to said timer;

said timer and said chucking repeaat fixer clearing up the chucking repeat mode of said chucking repeat circuit, and said motor control circuit stopping rotation of said drive motor, both upon receipt of said chucking complete signal from said current sensor which is concurrent by passed to said numerical control device as a work continuation order in order to enable subsequent operation of said transfer arm assembly as programmed,

said timer generating, when no chucking complete signal is received from said current sensor within a prescribed set time after receipt of said chucking start signal from said limit switch, a time-up signal which is passed to said motor control circuit as a reverse rotation order for said drive motor, and to said arm control circuit as a descent order for said transfer arm assembly, and

said chucking repeat fixer further generating, when chucking operation by said main spindle has ended in failure for prescribed times in succession, an interception signal which is passed to said motor control circuit as a stop order to said drive motor, and to said numerical control device as a work stop order to ban said subsequent operation of said transfer arm assembly as programmed.

4,398,137

CONTROL PROVISIONS FOR SERVO COMPONENT AT PRINTING OR BINDING MACHINES

Max Janicki; Hans-Georg Liefke; Reinhart Keil, and Gerd Geyer, all of Leipzig, German Democratic Rep., assignors to VEB Kombinal Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Apr. 3, 1981, Ser. No. 250,702

Claims priority, application German Democratic Rep., Oct. 4, 1980, 220350

Int. Cl.³ G05B *19/28*

U.S. Cl. 318—601 **10 Claims**

1. A regulating device for servo component, comprising a servo component,

a measuring device for determination of the actual setting of the servo component;

a storage for actual setting values connected to the measuring device;

a storage for set point values;

a comparison circuit connected to the storage for actual setting values and to the storage for set point values and operative for obtaining a deviation signal;

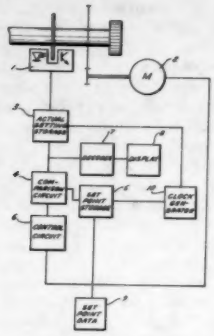
a set point value carrier connected to the storage for set points;

a clock generator connected to the storage for actual setting values and to the storage for set point values;

a decoder connected to the storage for actual setting values;

a display unit connected to the decoder; and

a control circuit having an input connected to the comparison circuit and having an output connected to the servo



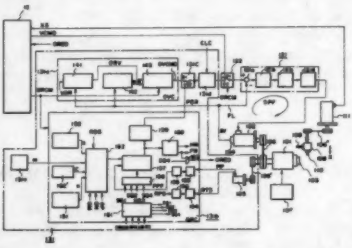
component and operative for controlling the servo component by using the deviation signal.

4,398,138

SPINDLE ORIENTATION CONTROL METHOD AND APPARATUS

Yoshinori Kohzai, Hino; Yoshiki Fujioka, Higashiyamato, and Naoto Ota, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,761
Claims priority, application Japan, Oct. 30, 1980, 55-152701
Int. Cl.³ G05B *19/28*
U.S. Cl. 318—603 **10 Claims**



1. A method of controlling the orientation of a spindle which comprises the steps of:

sensing the actual speed of a motor for driving the spindle to obtain an actual speed signal;

decelerating the motor on the basis of a spindle stopping command by means of a speed control circuit until the spindle is rotating at a constant predetermined speed, the deceleration being conducted in such a manner that the error between the actual speed signal and a speed command signal approaches zero;

generating a spindle stopping position command signal;

generating a positional error signal upon comparing, after the motor has attained the predetermined speed, the spindle stopping position command signal and a spindle orientation sensing signal;

controlling the rotation of the spindle, using the generated positional error signal with the speed control circuit instead of said speed command signal, so as to gradually decelerate the motor, and so as to make the positional error signal approach zero; and

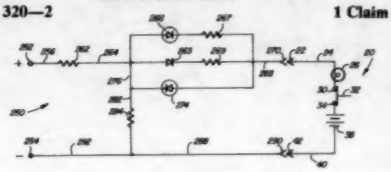
correcting the spindle stopping position command signal in accordance with the direction of spindle rotation.

4,398,139

RECHARGEABLE FLASHLIGHT COMBINED WITH A CONSTANT CURRENT BATTERY CHARGING CIRCUIT

Onno M. Prinsze, 4528 N. Pima Rd., Scottsdale, Ariz. 85261

Continuation-in-part of Ser. No. 964,944, Nov. 30, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 236,971
Int. Cl.³ H02J *7/02*
U.S. Cl. 320—2 **1 Claim**



1. Flashlight charging apparatus, comprising, in combination:

a rechargeable flashlight, including

a rechargeable battery comprising one or more cells,

a lamp,

a switch, having a closed position for connecting the rechargeable battery and the lamp, and having an open position for disconnecting the battery and the lamp, and

first terminal means for connecting the rechargeable flashlight to a battery charging circuit;

battery charging circuit means, including

a voltage source for charging the rechargeable battery in the rechargeable flashlight when the switch is in the closed position,

current means for providing substantially constant current for recharging the rechargeable battery without regard to the number of cells in the battery, including

voltage means connected to the voltage source, and

a first resistor combined with the voltage means for providing the substantially constant current to the rechargeable battery,

a second resistor and a diode connected in series, and

a third resistor;

a first light emitting diode connected in series with the third resistor of the current means to provide a visual indication that the rechargeable battery is being charged from the voltage source and the current means, said third resistor and first light-emitting diode being in parallel with the second resistor and diode for providing a higher substantially constant current for recharging the rechargeable battery than may flow through the first light-emitting diode; and

a second light emitting diode connected to the rechargeable battery to provide visual indication that the rechargeable battery is not being charged from the voltage source and the current means.

4,398,140

CONTROL APPARATUS FOR CHARGING GENERATOR

Mitsuharu Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 175,695, Aug. 6, 1980, abandoned. This application Apr. 2, 1982, Ser. No. 364,628
Claims priority, application Japan, Sep. 18, 1979, 54-129855
Int. Cl.³ H02J *7/14*
U.S. Cl. 320—36 **1 Claim**

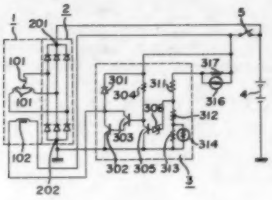
1. In a control apparatus for a charging generator comprising a battery charged by a rectified output of an AC generator having a field coil and a voltage regulator for controlling a field current passing through the field coil to control the output voltage of the generator in a predetermined value, an improvement which comprises;

a parallel combination of a first resistor and a first thermistor having a positive temperature coefficient which detects

the variation of ambient temperature of the voltage regulator to impart a negative temperature gradient to the voltage adjusting characteristic of the voltage regulator,

said first thermistor being thermally isolated from the generator and the voltage regulator, and

said voltage regulator comprising a series combination comprising second, third and fourth resistors connected to said parallel combination and a second thermistor connected in parallel with said fourth resistor and having a negative temperature coefficient which detects the self-heating of the generator or the voltage regulator during the operation to impart a positive temperature gradient to the voltage adjusting characteristic.



4,398,141

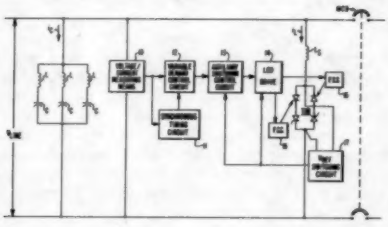
STATIC VAR GENERATORS

Michael B. Brennen, Wilkins Township, Allegheny County; Laszlo Gyugyi, and Eric J. Stacey, both of Penn Hills Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 15, 1981, Ser. No. 303,299

Int. Cl.³ H02J 3/18

U.S. Cl. 323—211 **3 Claims**



1. A static VAR generator, comprising:

(a) a capacitive current means disposed for connection into an AC network;

(b) a monitoring means connected to said AC network for monitoring the capacitive current requirement of the AC network;

(c) a control means connected to said capacitive current means and said monitoring means for causing connecting of said capacitive current means into said AC network in response to the reactive requirements of said AC network;

(d) switching means for connecting said capacitive current means into said AC network;

(e) an auxiliary transient free shutdown means for allowing said switching means to disconnect said capacitive current means from the AC network without causing restriking transients in the event of failure of said monitoring means or said control means; and

(f) surge suppression means for suppressing transients that may result from operation of said auxiliary transient free shut down means.

4,398,142

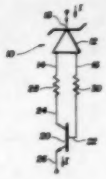
KELVIN-CONNECTED BURIED ZENER VOLTAGE REFERENCE CIRCUIT

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 9, 1981, Ser. No. 310,035

Int. Cl.³ G05F 3/18

U.S. Cl. 323—226 **8 Claims**



1. A voltage reference circuit comprising:

a buried zener diode having first and second anodes and a cathode, said first and second anodes having inherent parasitic resistances; and

a transistor having a base, collector, and emitter, said collector connected to said first anode, said base connected to said second anode, said transistor serving to compensate for voltage variations in said zener diode caused by said parasitic resistances and external temperature changes.

4,398,143

REMOTE SUPPLY CIRCUIT FOR ANALOG TWO-WIRE CONNECTION

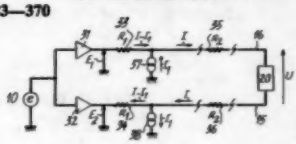
Marc Bonis, 2 Allee des Maraichers, 91310 Montlhery, France

Filed Jul. 15, 1981, Ser. No. 283,741

Claims priority, application France, Jul. 31, 1980, 80 16948

Int. Cl.³ H03H 1/00

U.S. Cl. 323—370 **4 Claims**



1. A remote supply circuit for an analog two-wire connection comprising at least one current source inserted between the earth and each of the two wires of the connection, wherein the said source comprises a direct current remote supply source and a variable transmission current source and wherein it comprises two RC series dipoles in each case inserted between the earth and the said two wires and a circuit able to fix to the earth the average potential of the wires.

4,398,144

APPARATUS FOR DETERMINING THE POSITION OF A SWITCH AND FOR MONITORING THE ASSOCIATED LINE FOR INTERRUPTIONS AND SHORT CIRCUITS

Lüder Heidemann, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 225,972

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3001940

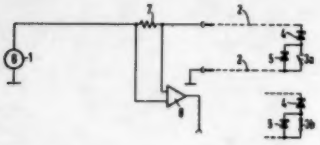
Int. Cl.³ G01R 31/02

U.S. Cl. 324—51 **6 Claims**

1. In an apparatus for use in determining the position of a switch connected to a two-wire line and for monitoring the two-wire line for interruption and short circuit disturbances,

the apparatus including at least one generator with an output test signal having a waveform of periodically changing amplitude, the two-wire line connecting the generator to the switch for transmitting the test signal thereto, the apparatus delivering signals indicating switch position and the presence of a disturbance, the improvement in which the waveform of the output test signal of the generator has flanks with finite slopes and further comprising:

threshold means coupled to the switch for providing an output signal responsive to switch position, the threshold means including a plurality of threshold circuits assigned



to respective positions of the switch and having different threshold levels for permitting current flow at different voltage levels of the same polarity of the two-wire line, whereby the time current flows at the output of the threshold means during a cycle of the output test signal of the generator is representative of switch position and of disturbances in the two-wire line; means including a trigger circuit coupled to the output of the threshold means for evaluating the output signal thereof and emitting an output signal representative of the time current is present at the output of the threshold means.

4,398,145

ELECTRICAL RESISTANCE MEASUREMENT

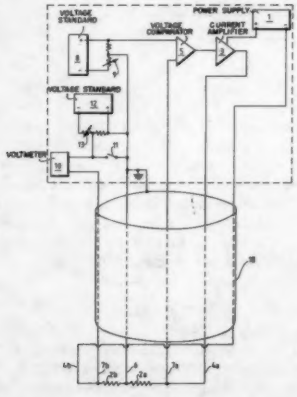
Joshua C. Quayle, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 16, 1980, Ser. No. 217,150

Claims priority, application United Kingdom, May 8, 1980, 8015220

Int. Cl.³ G01R *27/02*

U.S. Cl. 324—62 **9 Claims**



1. A method of monitoring a resistance modifying parameter of a test element by passing a current through said test element and a reference element connected in series therewith, maintaining the resistance modifying parameter of said reference element constant, varying said current to maintain the potential difference across the test element constant, and monitoring the potential difference across the reference element, characterised by varying the current by comparing the potential difference across the test element with a standard potential difference, producing a signal dependent on the difference between said potential differences, feeding said signal to a current modifier in series with the test and reference elements, whereby said current is varied in response to said signal to maintain the potential difference across the test element at a preset value.

4,398,146

TEST CIRCUIT FOR MOS DEVICES

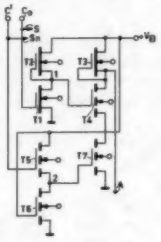
Peter Draheim, and Friedrich Hapke, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,232

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944149

Int. Cl.³ G01R *15/12*

U.S. Cl. 324—73 R **3 Claims**



1. A test circuit having MOS transistors and accommodated on a substrate together with at least one further MOS-circuit, which test circuit comprises at least one test terminal, which test terminal is capable of being combined with terminals of the further circuit and by means of which one or more test signals of a polarity opposite to that of the normal supply voltage are selectively applied, the further circuit then supplying signals which are indicative of the operation of the further circuit, thereby enabling said further circuit to be tested, said test circuit comprising a first gate circuit having an output and a first and a second input, the first input being coupled to one test terminal and the second input receiving a test signal of the same polarity as that of the supply voltage but of an amplitude which is substantially higher than that of said supply voltage, by means of which the test circuit is rendered responsive to test signals of a polarity opposite to that of the normal supply voltage on said first input terminal.

4,398,147

METHODS OF TESTING MULTIFREQUENCY DIALING SIGNALS

Timothy A. Shankland, Indianapolis, Ind., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 15, 1981, Ser. No. 254,563

Int. Cl.³ H04M *1/50*

U.S. Cl. 324—78 R **2 Claims**

1. A method of testing the frequency of a signal, which comprises the steps of:

(a) feeding a standard signal having a known amplitude through a signal preparation circuit to determine any gain or loss in amplitude as the signal is being fed through the signal preparation circuit;

(b) processing an unprocessed signal through the signal preparation circuit wherein the unprocessed signal is being prepared to test the frequency thereof;

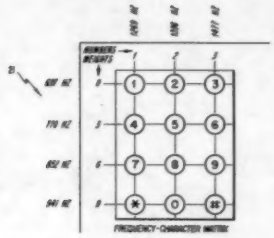
(c) adjusting the amplitude of the processed signal by an amount equal to the determined gain or loss of the amplitude of the standard signal;

(d) determining whether the adjusted amplitude of the pro-

cessed signal exceeds a predetermined threshold amplitude value;

(e) measuring, from a precise time of the unprocessed signal, the time interval required by a preset number of cycles of the unprocessed signal, in response to the determination that the adjusted amplitude of the processed signal exceeded the predetermined threshold amplitude value, to provide an indication of the frequency of the unprocessed signal; and

(f) comparing the measured time interval with a preset time interval to provide an indication as to whether the frequency of the unprocessed signal is an acceptable frequency.

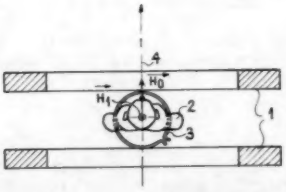


4,398,148

ELECTROMAGNETIC COIL SYSTEM FOR EXAMINATION OF LARGE OBJECTS BY NUCLEAR MAGNETIC RESONANCE AND WHOLE-BODY IMAGING MACHINE USING A SYSTEM

Yves M. Barjhoux, Orsay; Herve Saint Jalmes, Paimpol, and Jacques R. Taquin, Bures, all of France, assignors to Thomson - CSF, Paris, France

Filed Feb. 2, 1981, Ser. No. 230,706
Claims priority, application France, Feb. 5, 1980, 80 02497
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—307 **6 Claims**



1. A system of electromagnetic coils for examining bodies of large size such as the human body by means of nuclear magnetic resonance (NMR), comprising a first set of coils designated as an electromagnet for producing a uniform magnetic field H_0 in which the body to be observed is placed, and a second set of coils designated as NMR coils for producing a high-frequency (HF) magnetic field (H_1) at right angles to the field H_0 of the electromagnet, wherein:

the first set of coils comprises at least two symmetrical coils spaced at a sufficient distance from each other to permit introduction of the body to be observed between said two coils in the transverse position at right angles to the field H_0 of the electromagnet;

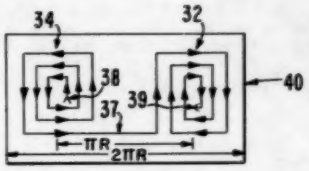
the second set of coils comprises at least one solenoid coil placed around the portion of the body to be examined.

4,398,149

NMR PROBE COIL SYSTEM

Albert P. Zens, Santa Clara, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 2, 1981, Ser. No. 230,226
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—319 **4 Claims**



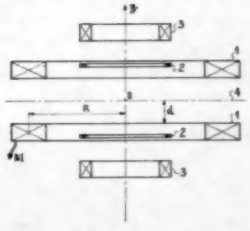
1. An NMR spectrometer comprising polarizing means for aligning nuclear moments of a sample, means for exciting rf resonances in said sample, receiver means for detecting said resonances, probe means communicating with said receiver means for coupling said resonance signal from said sample to said receiver, said probe means comprising saddle coil means comprising a first spiral winding portion and a second spiral winding portion, said second spiral winding portion wound in opposite sense to said first winding portion, the outer ends of said winding portions connected by a linking conductor, said winding portions capable of dispositions spaced apart in a common plane, said connecting link constrained to said plane.

4,398,150

IRONLESS HIGH-HOMOGENETY MAGNET AND ITS APPLICATION TO NUCLEAR MAGNETIC RESONANCE IMAGING

Yves M. Barjhoux, Orsay; Herve Saint Jalmes, Paimpol, and Jacques R. Taquin, Bures, all of France, assignors to Thomson - CSF, Paris, France

Filed Feb. 2, 1981, Ser. No. 231,213
Claims priority, application France, Feb. 5, 1980, 80 02496
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—319 **6 Claims**



1. An ironless magnet having high field uniformity comprising an even number of electromagnetic coils of revolution which are symmetrical with respect to a plane of symmetry at right angles to their axis of revolution, each coil being defined by its characteristic parameters:

its excitation current NI,

its means radius R,

the distance d between said coil and the plane of symmetry;

said magnet comprises at least two pairs of coils for increasing the number of available parameters and reducing the non-uniformity B_0 of the magnetic field; said coils defining an examination volume with a double access consisting of a longitudinal access along the axis of revolu-

tion and of a transverse access parallel to the plane of symmetry, thereby reducing the overall size and also the dissipated electric power of said magnets.

4,398,151

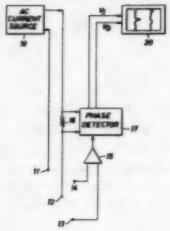
METHOD FOR CORRECTING AN ELECTRICAL LOG FOR THE PRESENCE OF SHALE IN A FORMATION

Harold J. Vinegar, and Monroe H. Waxman, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 115,472, Jan. 25, 1980, Pat. No. 4,359,687. This application Apr. 22, 1982, Ser. No. 370,712

Int. Cl.³ G01V 3/24

U.S. Cl. 324—323 **7 Claims**



1. A method for providing a corrected electrical log of shaly sand formations penetrated by a wellbore using measurements made in-situ in the wellbore, said method comprising:

inducing an electrical current in the formation; measuring both the in-phase C_I and quadrature conductivity C_Q of the formation in response to said induced current; determining the conductivity of C^* of the formation from the relation

$$C^* = \left(C_I + \frac{B}{\lambda_{eff}} C_Q \right)$$

and

recording the values of C^* with respect to depth to provide an electrical log corrected for the presence of shale in said formations penetrated by the borehole.

4,398,152

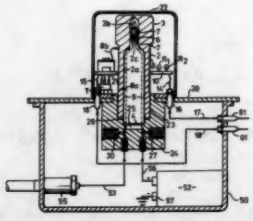
PHOTOIONIZATION DETECTOR

Richard C. Leveson, 288 Newton Dr., Willowdale, Canada M2M2P8

Continuation of Ser. No. 177,168, Aug. 12, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,989

Int. Cl.³ G01N 27/00

U.S. Cl. 324—465 **5 Claims**



1. A device for projecting ultraviolet radiation into a chamber containing electrodes used to sense ionization of chemical species passing through the chamber in the ultraviolet radiation, the device comprising:

a sealed non-metallic tube containing an inert gas at a reduced pressure, the tube having a window at an end of the tube lying transversely of the axis of the tube, the window being transparent to ultraviolet light and being adapted to form a wall of said chamber;

dielectric means positioned about the tube; and

an electrically conductive coil supported by the dielectric means and extending concentrically about the tube, the coil being adapted to be connected to a radio frequency source tuned to excite the inert gas inductively sufficient to cause ultraviolet radiation axially through the window for use in the chamber to ionize the chemical species.

4,398,153

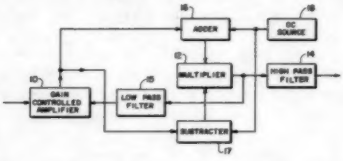
HARMONIC GENERATOR

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 6, 1981, Ser. No. 260,868

Int. Cl.³ H03B 5/00

U.S. Cl. 328—16 **9 Claims**



1. A harmonic generator responsive to an incoming signal which changes slowly in both frequency and amplitude comprising gain-controlled amplifier means receptive of said incoming signal and positioned in a feedback loop including a multiplier means,

low pass filter means disposed in the output of said multiplier means for deriving bias control voltage signals for regulation of the gain of said amplifier;

said multiplier means responding to output signals of said amplifier for providing multiplier output signals of amplitude proportional to the amplitude of said incoming signal and of a frequency which is double that of said incoming signal;

high pass filter means in the output of said multiplier means for removing from the same multiplier means output signls, the d.c. component;

addition and subtraction means for adding and subtracting of bias voltage before signals from the said means so as to decrease at maximum input voltage, the d.c. components of output.

4,398,154

READ CHANNEL GATE GENERATOR WITH SELF-ADJUSTING PULSE WIDTH COMPENSATOR

Patrick S. Lee, Campbell, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Apr. 10, 1981, Ser. No. 252,763

Int. Cl.³ H03K 5/06

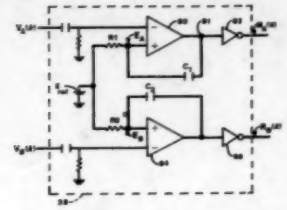
U.S. Cl. 328—58 **20 Claims**

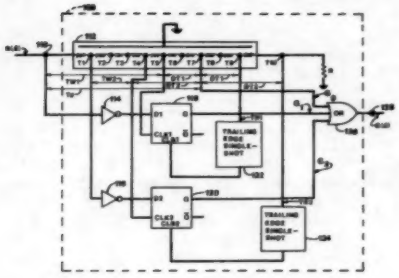
1. A gate generator circuit for producing gating pulses in response to a pulse type input signal, wherein the locations of the pulse peaks of the input signal are representative of data, said gate generator circuit comprising:

amplitude detector means for converting to a rectangular pulse each pulse of the input signal which exceeds a predetermined amplitude threshold, said rectangular pulse having positive and negative edges; and

pulse expander means coupled to said amplitude detector means and responsive to the rectangular pulses for producing the gating pulses by transmitting each rectangular

pulse unchanged in pulse width in a first case where the pulse width of each rectangular pulse is greater than a predetermined time duration, and by expanding by a predetermined amount each end of each rectangular pulse in a second case where the pulse width of each rectangular pulse is less than or equal to the predetermined time duration.





4,398,155

MULTIPLE CLOCK SWITCHING CIRCUIT

William D. Atwell, Jr., and Marc Belleville, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 15, 1981, Ser. No. 273,815
Int. Cl.³ H03K 5/26; H03L 7/00
U.S. Cl. 328—73 **4 Claims**

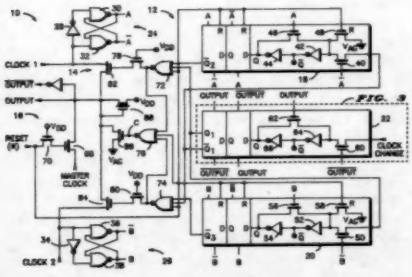


FIG. 9

1. A circuit for switching between first and second clock signals in response to a control signal, comprising:

first synchronizing means responsive to the control signal, for providing a first gate signal in response to receiving the first clock signal at a predetermined binary level within at least two pulses after the initiation of the control signal;

second synchronizing means responsive to the control signal, for providing a second gate signal in response to receiving the secondary clock signal at said predetermined binary level within at least two pulses after the termination of the control signal;

first gating means for selectively coupling the first clock signal to an output in response to the first gating signal;

second gating means for selectively coupling the second clock signal to the output in response to the second gating signal; and

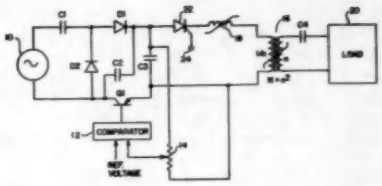
gated clamping means for selectively clamping all clock signals at the output to a reference voltage in the absence of the first and second gating signals.

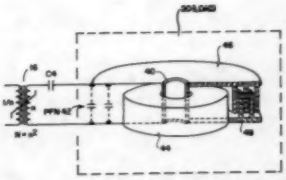
4,398,156

SWITCHING POWER PULSE SYSTEM

Kristian Aaland, Livermore, Calif. (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

Filed Nov. 7, 1980, Ser. No. 205,043
Int. Cl.³ H01J 23/00, 23/34; H05H 7/00
U.S. Cl. 328—233 **19 Claims**





1. A pulse forming system for a resistive beampipe for a linear accelerator, said system including a circuit for charging a capacitor from an ac source in order to produce a high power pulse into said beampipe, said system comprising

an electronic regulator means connected in series with the source and a capacitor for maintaining charging current at all time while voltage across the capacitor is below a predetermined reference level, and

switching means connecting said capacitor to said beampipe for producing therein a high power pulse, said switching means comprising a switching transformer,

said switching transformer being comprised of: a core having layers of core material; a number of single turn windings, one for each layer linking only the flux of one layer, said single turn windings being connected in parallel to form a fractional primary winding, where the fraction is equal to that fraction of the total flux linked by just one of said single turn windings; and a secondary winding linking all of said layers with a number of turns,

a capacitance connected in parallel with said beampipe and across said transformer, and

a saturable core surrounding said resistive beampipe to isolate the beampipe from said capacitance until said capacitance is fully charged from said transformer, whereupon said saturable core saturates and said pulse is applied to said beampipe.

4,398,157

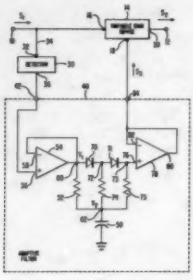
SIGNAL EXPANDER/COMPRESSOR WITH ADAPTIVE CONTROL CIRCUIT

Charles B. Dieterich, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 229,518, Jan. 29, 1981, abandoned. This application Apr. 28, 1981, Ser. No. 258,432

Int. Cl.³ H03G *7/06*

U.S. Cl. 330—86 **4 Claims**



1. A signal expander, comprising, in combination:

input means for receiving an input signal to be expanded;

detector means responsive to said input signal for producing an output signal having an amplitude which varies as a function of the envelope of said input signal;

variable gain means having a first input terminal coupled to received said input signal, a second input terminal for receiving an expansion control signal and an output terminal for providing an expanded output signal; and

adaptive filter means, responsive to the detector output signal, for producing and supplying said expansion control signal to said second input of said variable gain means, said adaptive filter means comprising:

an input node coupled via a first circuit path to receive said detector output signal, an output node coupled via a second circuit path to said second input of said variable gain means and a common node for receiving a reference potential;

first and second resistors connected in series, in the order named, between said input and output nodes;

a capacitor connected without intervening elements between a common connection of said resistors and said common node; and

a threshold conduction device having an input terminal connected solely to said input node and having an output terminal connected solely to said output node.

4,398,158

DYNAMIC RANGE EXPANDER

Robert L. Rodgers, Arlington, Tex., assignor to Micmix Audio Products, Inc., Dallas, Tex.

Filed Nov. 24, 1980, Ser. No. 209,695

Int. Cl.³ H03G *7/00*

U.S. Cl. 330—136 **6 Claims**

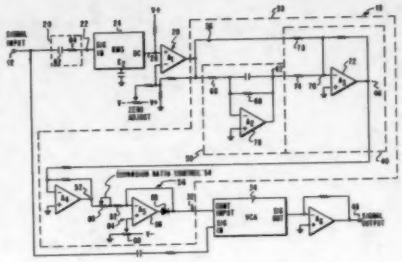
1. A dynamic range expander for an input signal, comprising in combination:

means for sensing the amplitude of the input signal and for providing a variable DC signal related to the amplitude of the input signal;

means for providing a second variable DC signal related to the sum of the first variable DC signal and an inverted, time-averaged first DC signal;

means for clamping the second variable DC signal; means for providing a control signal related to the clamped second variable DC signal; and

means for amplifying the input signal by a gain variable responsively to the control signal wherein the control signal substantially limits the amount of positive expansion



of the input signal without affecting the amount of negative expansion.

4,398,159

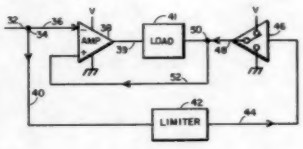
SWITCH MODE - CLASS B POWER AMPLIFIER

Edward T. Ball, Coquitlam, and John E. R. White, Port Moody, both of Canada, assignors to AEL Microtel, Ltd., Burnaby, Canada

Filed May 11, 1981, Ser. No. 262,241

Int. Cl.³ H03F *3/26, 3/45*

U.S. Cl. 330—262 **5 Claims**



1. An amplifier configuration, which operates at the theoretical efficiency of a class B amplifier, for amplification of an input signal to be applied to a load, comprising:

a power source for providing a power supply voltage of V between one output terminal and a ground potential;

a first circuit responsive to said input signal for deriving a square wave switching signal synchronous with said input signal;

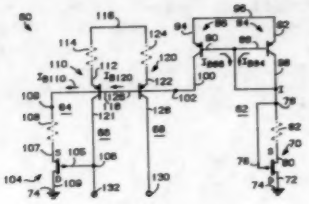
a second circuit responsive to said square wave switching signal to provide a square wave power control signal having alternate amplitude states of the voltage V and ground at an output terminal that is connected to one side of the load; and

a third circuit having first and second input terminals receiving the input signal and the control signal, respectively, and having an output terminal connected to the other side of the load; said third circuit being responsive to said power control signal to alternately provide said V voltage and ground at the output terminal thereof when the input signal is blocked from said first input terminal, the output of said third circuit then being in phase with that of said second circuit whereby no signal is developed therebetween; said third circuit being responsive to the application of said input and control signals thereto so as to provide amplification of said input signal such that the zero to peak value of the input signal will drive the output thereof between one of V and ground and the inverse thereof for alternate states of said switching signal; whereby a load driving voltage is obtained between the output terminals of said second and third circuits that has a peak-to-peak amplitude of twice the supply voltage V.

4,398,160
CURRENT MIRROR CIRCUITS WITH FIELD EFFECT TRANSISTOR FEEDBACK

Robert A. Neidorff, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 206,421, Nov. 13, 1980. This application Mar. 12, 1982, Ser. No. 357,456
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **12 Claims**



1. A current mirror circuit for providing an output current having the same magnitude as a drive current, including in combination:

constant current supply means having an output terminal;

variable current sink means having an input terminal and a control terminal, said input terminal being coupled to said output terminal of said constant current supply means, said control terminal being adapted to receive a drive signal which has a magnitude related to the magnitude of the drive current, and said variable current sink means providing a quiescent voltage having a substantially zero magnitude between said input and control terminals thereof;

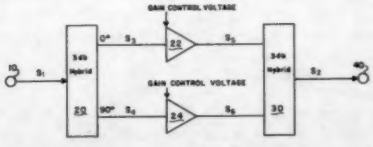
input current path means having an output terminal and a control terminal, said output terminal of said input current path means being coupled to said control terminal of said variable current sink means, and said control terminal of said input current path means being coupled to said input terminal of said variable current sink means; and

output current path means having a control terminal and an output terminal, said control terminal of said output current path means being coupled to said input terminal of said variable current sink means, and said output terminal of said output current path means being adapted to provide the output current to an electrical load, said variable current sink means selectively sinking the control currents of said input and output current path means in response to said drive signal to enable the output current to have substantially the same magnitude as the drive current.

4,398,161
PHASE-SHIFTING AMPLIFIER

Franklin D. Lamb, Enon; Steve Kiss, Jr., and Thomas K. Krueger, both of Fairborn, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 13, 1981, Ser. No. 253,453
Int. Cl.³ H01P *1/18, 5/04*
U.S. Cl. 333—156 **2 Claims**



1. A phased array antenna system, comprising:

a plurality of transmit/receive building block modules of electronic phase shifting circuits compensating for phase errors inherent in said system, said system including at least one microprocessor, and wherein each building block module has a source of input signals coupled to a signal splitting means;

said signal splitting means dividing said input signals into separate signal paths differing in quadrature;

amplifying means connected to said separate signal paths for amplifying the signal in each path;

said amplifying means having a control input for independently varying the gain of said amplifying means, said control means including both static anc dynamic control means;

said microprocessor being coupled via digital to analog converters to said control inputs for independently adjusting the gain of each of said amplifying means; and

signal combining means connected to said amplifying means for producing a resultant signal having a phase shift which is proportional to

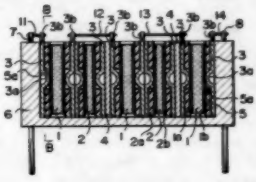
$$\tan^{-1} G_{24}/G_{22}$$

where G_{24} and G_{22} are the gains for the respective amplifying means.

4,398,162
LADDER-TYPE PIEZOELECTRIC FILTERS

Takesumi Nagai, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Oct. 13, 1981, Ser. No. 311,292
Claims priority, application Japan, Oct. 22, 1980, 55/150778[U]
Int. Cl.³ H03H *9/09, 9/13, 9/54, 9/52*
U.S. Cl. 333—189 **5 Claims**



1. A ladder-type piezoelectric filter comprising at least one series resonator, at least one parallel resonator, a plurality of connector elements each disposed on each side of each said resonator and having a small protrusion abutting against an oscillation node of each resonator, elastic insulator members each inserted between each said resonator and each said connector element in tight contact thereto and having an opening for passing the connector element protrusion, and an insulating housing for accommodating the foregoing components in a cascade arrangement.

4,398,163
ELASTIC SURFACE WAVE RECURSIVE FILTER

Michel Feldmann, Paris; Jeannine Hénaff, Clamart, and André Gabry, Le Plessis Robinson, of France, assignors to L'Etat Francais, Issy les Moulineaux, France

Filed May 13, 1981, Ser. No. 263,268
Claims priority, application France, Jun. 10, 1980, 80 12867; Oct. 13, 1980, 80 21827
Int. Cl.³ H03H *9/25, 9/64;* H03B *5/32*
U.S. Cl. 333—193 **8 Claims**

1. An elastic surface wave recursive filter, comprising:

a substrate;

a first delay line, including first and second surface wave transducers; disposed on said substrate;

a first amplifier means, connected across said first delay line and positioned externally of said substrate, for amplifying a signal from said first transducer;

a means, connected to an input of the filter, for introducing an elastic surface wave into said first delay line;

a first transversal filter, disposed on said substrate in spaced relation from said first delay line, coupled to said first delay line and connected to an output of the filter.

4,398,164

COAXIAL RESONATOR

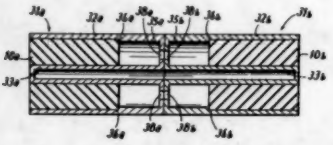
Toshio Nishikawa, Nagaokakyo; Sadahiro Tamura; Youhei Ishikawa, both of Kyoto, and Haruo Matsumoto, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

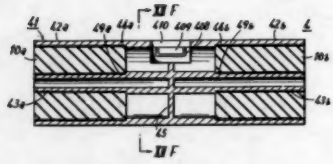
Filed Jan. 13, 1981, Ser. No. 224,748

Claims priority, application Japan, Jan. 24, 1980, 55-7821[U]

Int. Cl.³ H01P 7/04

U.S. Cl. 333—222 **11 Claims**





1. A coaxial resonator, comprising:

(A) a first ¼ wave length resonator including:

(1) a unitary metallic conductive member of sufficient rigidity to be self-supporting, said metallic conductive member having an outer hollow cylindrical portion and an inner cylindrical portion connected to each other by a radial connected portion, all of said portions being formed of a single metallic member and being integral with one another, said outer cylindrical portion being coaxially disposed with respect to and spaced apart from said inner cylindrical portion, said outer and inner cylindrical portions defining at least portions of outer and inner conductors, respectively, of said resonator, said radial connecting portion connecting said outer and inner cylindrical portions at respective first ends thereof to define a short-circuit end of said resonator, said metallic conductive member having a space defined between said outer and inner cylindrical portions and at least one open end; and

(2) a hollow cylindrical dielectric unit stationarily located in said space of said metallic conductive member;

(B) a second ¼ wave length coaxial resonator, including:

(1) a unitary metallic conductive member of sufficient rigidity to be self-supporting, said metallic conductive member having an outer hollow cylindrical portion and an inner cylindrical portion connected to each other by a radial connection portion, all of said portions being formed of a single metallic member and being integral with one another, said outer cylindrical portion being coaxially disposed with respect to and spaced apart from said inner cylindrical portion, said outer and inner cylindrical portions defining at least portions of outer and inner conductors, respectively, of said resonator, said radial connecting portion connecting said outer and inner cylindrical portions at respective first ends thereof to define a short-circuit end of said resonator, said metallic conductive member having a space defined between said outer and inner cylindrical portions and at least one open end; and

(2) a hollow cylindrical dielectric unit stationarily located in said space of said metallic conductive member; and

(C) said radial connecting portions of said first and second ¼ wave length coaxial resonators being mechanically connected to each other, said two ¼ wave length coaxial resonators being electrically isolated at said radial connecting portions.

4,398,165

ELECTROMAGNETIC DEVICE

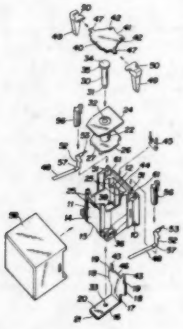
Hiroshi Iketani, Kamisato, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 26, 1981, Ser. No. 315,267

Claims priority, application Japan, Oct. 27, 1980, 55-151125

Int. Cl.³ H01H 45/04

U.S. Cl. 335—202 **4 Claims**



1. An electromagnetic device comprising:

an magnetic core with a flange formed at one end defining a first pole and a portion at the other end defining a second pole;

a coil spool having a collar at one end and an axially extending bore therethrough for receiving said core so that said flange contacts said collar and said portion extends beyond said bore;

an exciting coil wound about said spool;

a yoke defining part of a magnetic flux path between said poles and having a hole therethrough for receiving and fixing said portion of said core;

a terminal block having supply contacts for supplying current to said exciting coil;

a movable piece defining part of said flux path and resiliently supported from said yoke adjacent said collar for movement from a first to a second position in response to supply of current to said coil;

spring means for biasing said piece toward said first position; and

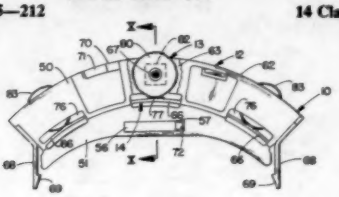
contact means mounted on said block and operable by movement of said piece to said second position;

said terminal block being held between said collar and said fixed portion of said core, and said coil spool, yoke and terminal block forming a unitary body with said iron core.

4,398,166
COMPENSATOR FOR CRT DEFLECTION YOKES AND THE LIKE

Donald L. Bumgardner, South Lyon, Mich., assignor to Northern Telecom Inc., Nashville, Tenn.

Filed Jun. 1, 1981, Ser. No. 268,730
Int. Cl.³ H01F 7/00
U.S. Cl. 335—212 **14 Claims**



1. A compensator for CRT deflection yokes and the like, comprising:

a housing adapted for fixed mounting adjacent a CRT deflection yoke;

at least one magnet;

a wheel comprising a manually rotatable carrier for said magnet, said wheel including means for carrying said magnet adjacent to and generally in the same plane with said wheel;

means for rotatably mounting said wheel and the said magnet carried therewith upon said housing; and

means for positively and releasably engaging said wheel to thereby retain said magnet in a selected position of wheel rotation with respect to said housing, to thereby enhance selective positioning of said magnet altering the effective electromagnetic field produced by the deflection yoke to alleviate distortion in the CRT display, and to maintain such selected magnet position;

said housing being adapted for mounting in a position in which it at least partially encircles the longitudinal axis of the CRT with the housing disposed in a plane generally perpendicular to said CRT axis, and said magnet having oppositely-disposed poles and being carried by said wheel for rotation about an axis disposed generally perpendicular to said plane of said housing and generally parallel to the said CRT axis.

4,398,167
LIMITED ANGLE ELECTRIC ROTARY ACTUATOR

Hugh G. Dickie, Chandlers Ford; Anthony R. Hearn, and John S. Heath, both of Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 192,785, Sep. 29, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,331
Claims priority, application United Kingdom, Dec. 28, 1979, 7944530
Int. Cl.³ H01F 7/08
U.S. Cl. 335—272 **4 Claims**

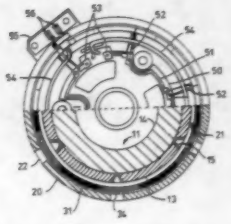
1. An electric rotary actuator for producing rotation through a limited angle to position magnetic heads of a magnetic disk file over selected information-bearing tracks on a disk, said actuator comprising:

a stator (11) comprising a hollow magnetically permeable core (14),

a plurality of axially extending, radially magnetized permanent magnets (13) circumferentially mounted around said core and separated by axially extending magnetic flux gaps (15) of uniform width, the outer cylindrical surface of said magnets constituting a plurality of circumferentially displaced magnetic pole faces of alternate polarity;

an annular flux return means (20) surrounding said magnets and spaced therefrom to provide an annular magnetic flux gap (21), said flux return means having a plurality of axially extending slots (22), each circumferentially aligned with a respective one of said axially extending flux gaps; and

a non-magnetic rotor concentrically disposed in the annular flux gap (21) and comprising a winding (30) including a plurality of substantially rectangular loop coils (31) that

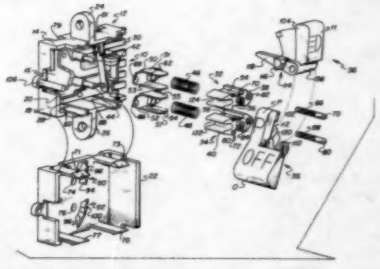


are curved out-of-plane and arranged edgewise in a substantially continuous cylindrical structure so that, throughout rotation within the limited angle, each pair of adjacent axially extending portions of adjacent coils (31) will be substantially opposite a respective one of the circumferentially displaced pole faces.

4,398,168
SWITCHING MECHANISM

John W. Smith, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 10, 1982, Ser. No. 356,834
Int. Cl.³ H01H 71/16
U.S. Cl. 337—58 **7 Claims**



1. A switch mechanism comprising:

(a) a housing,

(b) a pivotally mounted actuator carried in said housing,

(c) electrically conductive paths carried by a base of said housing,

(d) a pair of electrical contact assemblies each including a holder pivotally carried on said base and spring biased between said base and a wall of said housing, and further engaging said actuator to be pivoted thereby, electrical contact means carried by said holder and selectively engaging said electrically conductive paths, and a spring biased detent plunger carried by said holder, and

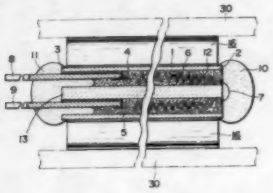
(e) a pair of detent cavities carried by said wall and adapted to receive said plunger.

4,398,169

RESISTANCE THERMOMETER ELEMENT

Masaki Hayashi, Ikuta Haimu No. 110, 3207-6 Ikuta, Tama-ku, Kawasaki-shi, Kanagawa-prefecture, Japan

Filed Dec. 18, 1980, Ser. No. 217,692
Claims priority, application Japan, Jun. 23, 1980, 55-91007[U]
Int. Cl.³ H01C *3/04*
U.S. Cl. 338—25 **7 Claims**



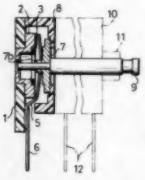
1. A ceramic thermometer resistance element comprising a coil-shaped resistor for measuring temperature inserted in a ceramic tube together with filler particles to thereby fix the resistor, characterized in that the filler particles are composed of ceramic spherical particles having a diameter of 40 to 150 mm which are calcined after insertion in said tube at temperatures much higher than the upper limit of the temperature-measuring range of the element, the ceramic spherical particles filling up the gaps between the ceramic tube and the resistor and the gaps of the coils of the resistor, and adhering to each other by said calcining to hold the resistor statically in the ceramic tube.

4,398,170

SWITCH ASSEMBLY FOR VARIABLE RESISTOR

Teruo Nishikawa, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jun. 18, 1981, Ser. No. 275,124
Claims priority, application Japan, Jun. 18, 1980, 55-85354[U]
Int. Cl.³ H01C *10/50*
U.S. Cl. 338—198 **2 Claims**



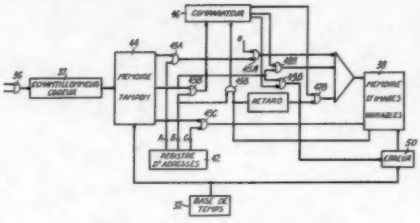
1. A switch assembly for use with a variable resistor formed by at least one rotary variable resistance device having a common operation rod adapted to be rotated for actuating each said rotary variable resistance device and slid axially within said variable resistor for actuating the switch assembly; comprising a substrate held posteriorly to said variable resistor and carrying a stationary contact; an actuator held to an end portion of said operation rod and spaced from said stationary contact; and a moveable contact formed of a resilient material and having a central portion shaped as a dome extending away from said stationary contact and a lead portion extending from said central portion, said lead portion being connected with said substrate, said central portion engaging said actuator while resiliently urging it continually away from said stationary contact to bias said operation rod continually in its axial outer position and adapted upon inward axial movement of said operation rod to invert the shape of said central portion abruptly to engage said central portion with said stationary contact and to dis-engage the central portion from said stationary contact abruptly upon release of said operation rod.

4,398,171

VIDEO SYSTEM FOR PLOTTING AND TRANSMITTING VIDEO TRAFFIC INFORMATION

Pierre-Louis Dahan, 106, Blvd. Pereire, 75017 Paris, and Phac Letuan, 5, Parc de la Vievr, L'Hay-Les-Roses, both of France

Filed Feb. 23, 1981, Ser. No. 236,991
Claims priority, application France, Feb. 26, 1980, 80 04196
Int. Cl.³ G08G *1/09*
U.S. Cl. 340—22 **6 Claims**



1. System for video display by superposing, on the screen of a vehicle-based receiver's image tube, a relatively high definition image defining a road map or a town plan selected from amongst a plurality of such map or plan images and a relatively low definition image defining indication signals to be represented on the map or the plan for information purposes, said system comprising:

means for radio transmitted a plurality of data items related to said low definition images, said data items including respective addresses;

means for selectively receiving said data items having a given address;

memorizing means for storing said data items having said given address;

means for displaying said road map or town plan image on the said image tube screen; and,

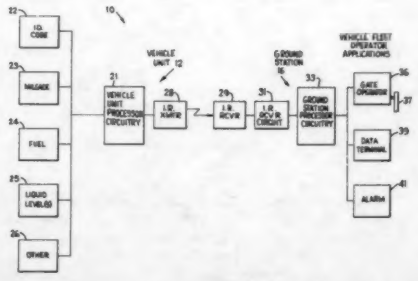
means for scanning said memorizing means containing the data items at a predetermined frequency and for displaying the corresponding low definition image on the said screen.

4,398,172

VEHICLE MONITOR APPARATUS

Robert J. Carroll, Plano, Tex.; Roger A. Keller, Livonia; E. James Lane, Highland, both of Mich., and Freddie G. Williams, Huntington Beach, Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 8, 1981, Ser. No. 271,476
Int. Cl.³ G08G *1/04;* G08C *17/00;* H04B *9/00*
U.S. Cl. 340—38 P **23 Claims**



1. In a vehicle monitor apparatus for monitoring vehicles in a monitoring location, a monitoring unit comprising a photoe-

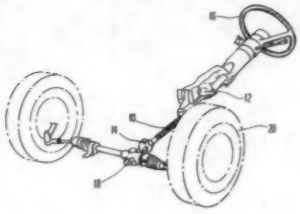
lectric infrared receiver and an infrared receiver circuit driven thereby, said receiver circuit comprising a high gain preamplifier with a first input driven by said photoelectric receiver and an ambient light compensation feedback path connected from the output of said preamplifier to said photoelectric receiver and preamplifier first input for holding low the voltage across the photoelectric receiver by closed loop feedback during high light levels.

4,398,173

SAFENESS INDICATOR FOR FLEXIBLE SHAFTS USED IN AUTOMOTIVE STEERING MECHANISMS

Walter Kulischenko, Middlesex, N.J., and Philip E. Bloomfield, Bala Cynwyd, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 8, 1981, Ser. No. 309,648
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—52 R **10 Claims**



1. Safety indicating unit for indicating condition of safeness of a flexible shaft rotating in response to rotation of a steering wheel in a vehicle steering system wherein deterioration of said flexible shaft produces greater torsional deflection thereof when said steering wheel is rotated in either direction, said unit comprising

a plastic member having piezoelectric properties, said member secured to an outermost layer of windings of said flexible shaft,

means for generating electrical signals by said plastic piezoelectric member in proportion to torsional deflection of said flexible shaft, and

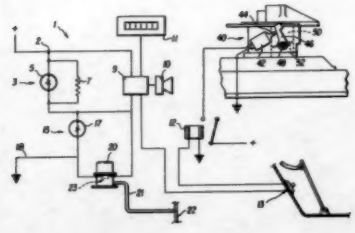
other means for indicating said generated electrical signals into an indication of safeness of said torsionally deflected flexible shaft.

4,398,174

FUEL CONSUMPTION SIGNALLING SYSTEM

Raymond P. Smith, Jr., P.O. Box 294, 129 Susquehanna St., Williamsport, Pa. 17701

Continuation of Ser. No. 27,614, Apr. 5, 1979. This application Nov. 17, 1980, Ser. No. 207,652
Int. Cl.³ F01D *21/02*; B60Q *1/00*
U.S. Cl. 340—53 **14 Claims**



1. A fuel consumption signalling system for signalling both efficient and inefficient fuel consumption conditions in the engine of a motor vehicle, comprising:

(a) an alarm circuit including, connected in parallel, an alarm light and a resistor, said alarm circuit being actuatable by a predetermined potential difference;

(b) an indicator circuit connected to said alarm circuit in series to form a series circuit, said indicator circuit including, connected in parallel,

(i) an indicator light for indicating an efficient operating condition in the motor vehicle engine and for serving as a voltage divider for any potential applied across said series circuit, and

(ii) a vacuum operated, normally open switch pneumatically connected to the engine manifold for shunting any electric potential applied across said indicator lamp around said indicator lamp when the manifold pressure closes said switch, and

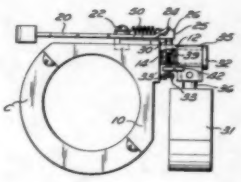
(c) means for applying a potential difference across the series circuit, said applied potential being greater than the potential necessary to actuate the alarm circuit when said potential is shunted around the indicator light when the vacuum operated switch is closed, but less than the potential necessary to actuate the alarm circuit when the switch is open and the applied potential is divided between the indicator light and the alarm circuit.

4,398,175

APPARATUS FOR AUTOMATICALLY CANCELLING A TURN SIGNAL

Gregory G. Gamba, 646 Freeman St., Orange, N.J. 07050

Filed Aug. 20, 1980, Ser. No. 179,774
Int. Cl.³ B60Q *1/34*
U.S. Cl. 340—73 **4 Claims**



1. An apparatus for automatically cancelling a manually-initiated vehicle turn signal responsive to movement of the vehicle in the direction of the turn so signalled and for maintaining the turn signal in cancelled condition until a further turn signal is manually initiated by closing one of a pair of vehicle turn signal circuits, comprising:

(a) a frame, adapted to be mounted on the vehicle;

(b) an arm, pivotally mounted on the frame, manually selectively movable in the direction of the intended turn of the vehicle, which includes portions adapted to enable the arm to be retained in the manually selected position, and a pair of electrical contacts, movable with the arm relative to the pair of vehicle turn signal circuits and adapted to close one of the vehicle turn signal circuits responsive to such movement of the arm;

(c) means for biasing the arm in a non-signal-initiating position, connected to the frame;

(d) means for engaging the arm retention-enabling portions, reciprocally mounted in the frame;

(e) means for biasing the engaging means into engagement with the arm; and

(f) means, mounted in the frame and connected to the arm engaging means, for automatically releasing the arm from the manually-selected position responsive to gravitational force exerted on such automatic arm-releasing means upon displacement of the center of gravity of the vehicle on movement of the vehicle in the direction of the sig-

nalled turn, to open the selectively-closed vehicle turn signal circuit and cancel the turn signal.

4,398,176

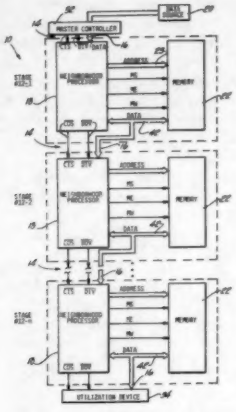
IMAGE ANALYZER WITH COMMON DATA/INSTRUCTION BUS

William O. Dargel; Robert M. Lougheed, and David L. McCubbrey, all of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Aug. 15, 1980, Ser. No. 178,315

Int. Cl.³ G06K *9/36;* **G06F** *15/20*

U.S. Cl. 382—27 **19 Claims**



1. A system for analyzing images represented by a serial stream of digital electrical signals corresponding to values of pixels in a matrix of points constituting an image, said system comprising:

a pipeline of substantially identical neighborhood transformation stages, each stage including a processor portion for analyzing the pixel values in a neighborhood window and supplying a transformation output thereof to a succeeding stage, each stage further including a memory portion communicating with the processor portion for sequentially providing substantially all of the neighborhood windows in the image to the processor for analysis;

a central programmable controller; and

a communication link including a bus having conductor lines connected between the controller and an input of the first stage, and conductor lines connected between an output of the first stage and an input of a succeeding stage in the pipeline, said bus being operative to provide both pixel data values for analysis and transformation control instructions over the same conductor lines to the stages in the pipeline; and

first means for differentiating between the types of information on the bus.

4,398,177

METHOD AND CIRCUIT ARRANGEMENT FOR FORMATION OF FEATURES FOR AUTOMATIC CHARACTER RECOGNITION

Lutz Bernhardt, Constance, Fed. Rep. of Germany, assignor to Computer Gesellschaft Konstanz mbH, Fed. Rep. of Germany

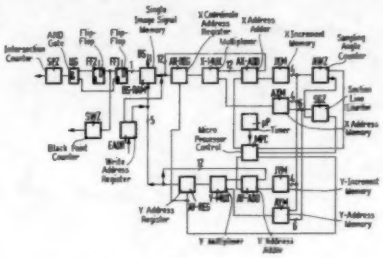
Filed Feb. 11, 1981, Ser. No. 233,386

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005206

Int. Cl.³ G06K *9/50*

U.S. Cl. 382—18 **2 Claims**

1. A method for the formation of features for automatic character or object recognition by employment of an opto-electrical transducer which samples the respective character or object column-wise, said transducer being comprised of a series of photo sensors, comprising the steps of: placing output signals of the photo sensors in a following image signal memory as an image pattern matrix comprised of black-white levels and corresponding to the sampled character or object; reading out the stored image pattern matrix analogously to a character sampling at different sampling angles with a respective plurality of section lines numbered for identification for each of said sampling angles; and determining a respective number of intersections resulting between the section lines and the character or object for each section line for each sampling angle in the form of black/white level or white/black level transitions; and utilizing the intersections identified for each sampling angle and section line occurring in such manner for the formation of



features for the automatic character or object recognition, said features comprising:

(a) a sampling range of the numbered section lines which intersect the respective character at least once for each sampling angle,

(b) a sum of the intersections for all section lines for each sampling angle,

(c) a center of gravity of the sampling range determined by a quantitative distribution of intersections of section lines for each sampling angle, and

(d) a scatter of the intersections within the sampling range related to said center of gravity to determine whether section lines with higher intersection counts lie closer to the edge of a character or closer to the area of the center of the character.

4,398,178

APPARATUS FOR TRANSMITTING INFORMATION ON AN ALTERNATING CURRENT LINE

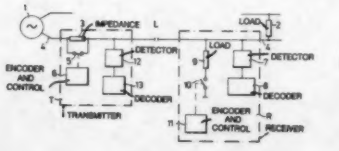
Arild Russ, Masvägen; Pehr-Olof G. Sjöstrand, Barrstigen; Ingvar P. Sternberg, Fugavägen, and Lars G. S. Lindberg, Mariedalsvägen, all of Sweden, assignors to Handelsbolaget Light Regulation, Sweden

Filed Apr. 3, 1980, Ser. No. 136,791

Claims priority, application Sweden, Apr. 12, 1979, 7903295

Int. Cl.³ H04B *3/54*

U.S. Cl. 340—310 A **13 Claims**



1. A system for transmitting information on an a.c. power line having at least two conductors and being connected at its

one end to an a.c. power source supplying said line with alternating voltage and current, said alternative voltage having a waveform of a succession of half wave cycles,

said system comprising a transmitter unit connected to said line and a receiver unit also connected to said line at a greater distance from said a.c. source than said transmitter unit;

said transmitter unit including a current transformer having a primary winding inserted to series in one of said conductors and a secondary winding; controlled short-circuiting means connected across said secondary winding; encoding and control means for receiving the information to be transmitted and for encoding said information into a binary digital code and connected to said short-circuiting means for causing said short-circuiting means to open briefly and interrupt the short-circuiting of said secondary winding in a selective combination, corresponding to said binary digital code, of a plurality of time positions located at mutually constant time intervals within one and the same half cycle of the alternating voltage waveform on said one conductor and also within one and the same half cycle of the alternating current flowing through said one conductor, whereby said half cycle of the alternating voltage waveform exhibits a series of transient amplitude reductions conforming to said binary digital code; a voltage regulator connected across said current transformer for limiting, when said short-circuiting means are opened, the flux changes in the iron core of said current transformer to a maximum value; and a current regulator comprising means connected to said one conductor for sensing the alternating current flowing therethrough, means for comparing said sensed current value with a reference value, and means controlled by said comparison means for maintaining the magnetizing current of said current transformer above a given minimum value during said half cycle; and

said receiver unit including detector means connected to said one conductor for detecting said transient amplitude reductions appearing in the alternating voltage waveform on said one conductor, and decoding means for decoding said binary digital code represented by said transient amplitude reductions.

4,398,179

ANALOG-TO-DIGITAL CONVERTING CIRCUIT

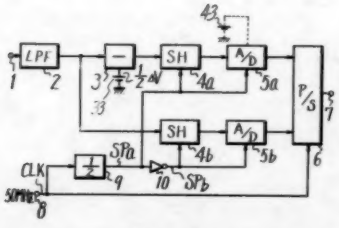
Shinji Kaneko, Sagamihara, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,324

Claims priority, application Japan, Dec. 3, 1980, 55-170710

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **9 Claims**



1. An analog-to-digital converting circuit comprising input means for receiving an analog signal to be converted to digital form; clock signal generating means for generating first and second control clock signals having the same frequency but having a half-cycle phase difference therebetween; first and second analog-to-digital converting stages each having an input coupled to said input means for receiving the input analog signal, a control terminal for receiving a respective one of said first and said second control clock signals, and an output providing an N-bit binary coded digital signal representing the level of said analog signal, and each having a voltage quantizing step of ΔV; an output terminal; multiplexing means for alternately applying to said output terminal the binary coded digital signals of said first and second analog-to-digital converting stages; and offset means for providing to one of said first and second analog-to-digital converting stages an offset voltage, relative to the other of such stages, of $\frac{1}{2}\Delta V$, such that the digital signals provided at said output terminal have an accuracy of $\frac{1}{4}\Delta V$.

4,398,180

CONTACTLESS KEYBOARD

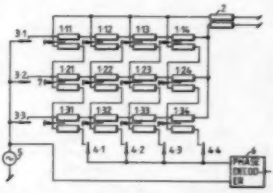
Johannes Rometsch, Rickenbach; Werner U. Frey, Thalwil, and Hans Diem, Schindellegi, all of Switzerland, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,895

Claims priority, application Switzerland, Jun. 26, 1980, 4897/80

Int. Cl.³ H03K *13/00*; G06F *3/02*

U.S. Cl. 340—365 L **11 Claims**



1. Contactless keyboard comprising a plurality of keys; a plurality of key transformers each associated with one of said keys and including a primary and a secondary winding and a plunger-type core movable relative to the respective key transformer between a retracted and an extended position in response to the operation of the associated key; a plurality of individual first electric branches each connecting said primary windings of a first group of said key transformers in series with one another; a plurality of individual second electric branches each connecting said secondary windings of a second group of said key transformers in series with one another such that each of said key transformers of any one of said first groups is a member of a different one of said second groups; a source of alternating electric current; means for distributing the alternating electric current in succession to said first branches for the electric current to flow through said primary windings and induce voltages of a first direction in said secondary windings of said key transformers of the respective first group, such voltages being of a higher first magnitude with the respective core in said extended position and of a lower second magnitude with the respective core in said retracted position, said distributing means including a connecting member; a compensating transformer common to said key transformers and including a primary winding connected in series with all of said first branches and a secondary winding connected in series with all of said second branches, said primary and secondary windings of said compensating transformer being so arranged relative to one another that flow of the electric current through said primary winding thereof induces in said secondary winding thereof a voltage of an opposite second direction and of a magnitude between said first and second magnitudes with attendant phase reversal in the respective second branch upon movement of said core between said extended and retracted positions; selecting means including a selecting member having an output and operative for connecting said second branches in succession to said output to supply output signals thereto; and evaluating means connected to said output and operative for evaluating the phase of the output signals, including phase

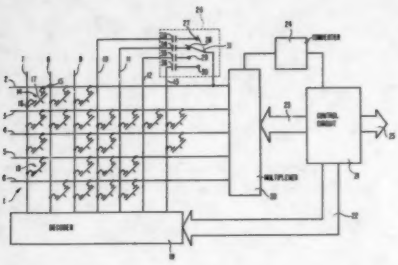
comparison means operative for comparing the phase of the respective output signal with that of a reference signal.

4,398,181

KEYBOARD ENTRY SYSTEM

Takemi Yamamoto, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 24, 1981, Ser. No. 247,010
Claims priority, application Japan, Apr. 15, 1980, 55-50185
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 S **4 Claims**



1. A keyboard entry system having a key matrix circuit, comprising

a plurality of column lines and a plurality of row lines;

a plurality of capacitance switches respectively arranged at different intersections of said column lines and row lines, each of said capacitance switches including a first capacitor plate connected to one of said column lines, a second capacitor plate connected to one of said row lines, and an actuating member for abruptly changing the value of capacitance between said first and second plates when operated; and

a select switch having a condenser, a movable contact connected to a selected one of said column lines and a plurality of fixed contacts, respectively, being connected to different row lines other than the row lines to which said selected column line is connected through said capacitance switches,

each of said fixed contacts being selectively connected to said movable contact, whereby said selected column line is connected to one of said different row lines through said condenser which has an equivalent capacitance to that appearing between said first and second capacitor plates of said capacitance switches when operated, whereby the selected condition of said select switch and the operated condition of said capacitance switches are selectively scanned with the concurrent sequential selection of one of said column lines and one of said row lines.

4,398,182

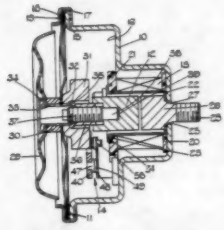
ELECTROMAGNETIC HORN

Ernest G. Hibell, and Raymond West, both of Birmingham, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 13, 1981, Ser. No. 243,478
Claims priority, application United Kingdom, Mar. 21, 1980, 8009715
Int. Cl.³ G08B *3/10*
U.S. Cl. 340—388 **8 Claims**

1. An electromagnetic horn comprising a hollow body, an electrical coil mounted in said body, an armature extending into said coil, a screw-threaded rod extending from said armature, a diaphragm secured around the periphery thereof to said body and having means defining a central aperture, a mass having means defining an aperture therethrough in alignment with the aperture in said diaphragm, a sleeve extending through said apertures in said diaphragm and said mass, said sleeve having an external, laterally projecting abutment shoulder at one end thereof, said sleeve having securing means securing said diaphragm and said mass together by clamping diaphragm and said mass between said abutment shoulder and said securing means, and said screw-threaded rod being screw-engaged in said sleeve so that adjustment of said armature relative to said coil for air gap-setting purposes can be effected by rotation of said screw-threaded rod.

5. An electromagnetic horn comprising a hollow body, an electrical coil mounted in said body, an armature mounted in said body, a diaphragm connected with said armature for movement thereby, and a contact breaker assembly mounted in said body, said contact breaker assembly comprising first and second contacts, a first electrically conductive arm, (a) said first arm being secured at one of its ends to said body and



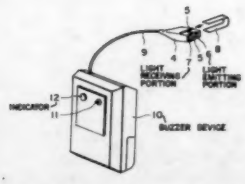
electrically insulated thereform, (b) an adjuster engaging said first arm at its other end, (c) said first arm having an intermediate portion carrying said first contact, and (d) said first arm being electrically connected with one end of said coil, and a second electrically conductive arm, (a) said second arm being mounted on said first arm and electrically insulated therefrom, (b) said second arm carrying said second contact, (c) said second arm being arranged to flexed during movement of said armature to move said second contact relative to said first contact, and (d) said second arm being provided with an extension which is resiliently urged into engagement with an electrically conductive element fixed relative to said body whereby an electrical circuit through said coil is completed through said electrically conductive element and said extension of said second arm.

4,398,183

DETECTING METHOD AND APPARATUS FOR PERMANENT WAVE HAIRDRESSING

Akitoshi Ando, Itabashi, Japan, assignor to Kyoritsu Electrical Works, Ltd., Tokyo, Japan

Filed Apr. 28, 1980, Ser. No. 144,097
Int. Cl.³ G08B *23/00*; G01N *31/22*
U.S. Cl. 340—500 **3 Claims**



1. An apparatus for detecting a condition of permanent waves in hair during a permanent wave hairdressing procedure which produces hydrogen sulfide gas, comprising:

signal generating means;

a lead acetate test paper connected to said signal generating

means, said lead acetate paper changing color when exposed to said hydrogen sulfide gas;

a sealable head cap having an attachment portion on an under surface, said lead acetate test paper being attached to said attachment portion formed on said under surface of said cap; and

buzzer means connected to said signal generating means, said buzzer means generating warning sounds when activated by said signal generating means when said lead acetate test paper is changed into a dark color of a predetermined constant density.

4,398,184

INTRUSION ALARM SYSTEM FOR BUILDINGS UTILIZING THE BUILDING STRUCTURE AS A COMMUNICATIONS PATH FOR ALARM SIGNALS OR FOR SECURITY SYSTEM ACTIVATION SIGNALS

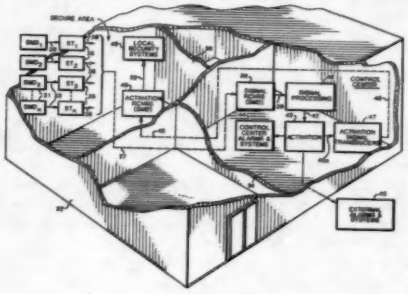
David R. Scott, Lancaster, Calif., and Thomas S. Rhoades, Colorado Springs, Colo., assignors to Scott Science & Technology, Inc., Lancaster, Calif.

Division of Ser. No. 86,772, Oct. 22, 1979, Pat. No. 4,287,511. This application Jul. 6, 1981, Ser. No. 280,298

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ G08B *13/10*

U.S. Cl. 340—531 **3 Claims**



1. In an intrusion alarm system for detecting unauthorized entry of persons into a defined secure area within a building structure, said system including

sensor means for detecting an intrusion into said secure area and generating intrusion signals in response thereto,

control means responsive to said intrusion signals for generating alarm signals, and

means for transmitting said intrusion signals to said control means,

the improvement comprising that the means for transmitting said intrusion signals comprises:

(a) transducer means in said secure area for converting said intrusion signals from said intrusion sensors to mechanical inpulses and for applying said impulses to said building structure;

(b) a sensor carried by said building structure for sensing deflections of said building structure by said impulses and for generating secondary intrusion signals; and

(c) means for transmitting said secondary intrusion signals to said control means.

4,398,185

SIMPLE AND RUGGED FISHING ALARM

Joseph M. Roberts, Sr., P.O. Box 2383, Alameda, Calif. 94501

Filed Jan. 8, 1981, Ser. No. 223,439

Int. Cl.³ A01K *97/12*

U.S. Cl. 340—573 **10 Claims**

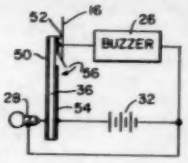
1. An alarm device for use with fishing apparatus and the like comprising a housing,

electrical alarm means including an electrical buzzer and an electrical light mounted in said housing;

an electrical battery mounted in said housing,

means electrically connecting a first terminal of said battery to a terminal of said alarm means,

switch means mounted in said housing and switchably electrically connecting a second terminal of said battery to a second terminal of said alarm means, said switch means including a rotatable arm extending from said housing and responsive to a fishing line for actuating said alarms,



a planar member having two spaced conductive layers on a major surface, one of said spaced conductive layers electrically contacting said battery and the other of said spaced conductive layers electrically contacting said alarm means, a wiper blade operably connected to said rotatable arm for electrically interconnecting said spaced conductive layers,

a pin extending through said planar member, said rotatable arm attached to one end of said pin on one side of said planar member and said contact means attached to the other end of said pin on the side of said major surface, and

means for adjusting drag on said rotatable arm.

4,398,186

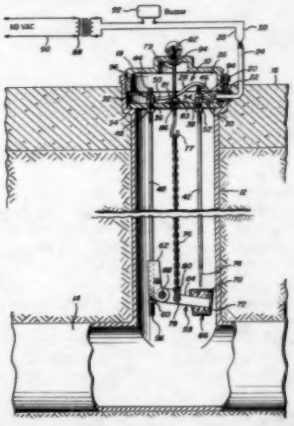
SEWER BACK UP WARNING SYSTEM

Ralph M. Statz, 3703 Wildon Dr., Eau Claire, Wis. 54701

Filed May 27, 1981, Ser. No. 267,709

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—616 **6 Claims**



1. In combination with an upstanding pipe section whose lower end portion is in communication with a liquid flow line and which pipe section is subject to an unwanted rise of liquid level therethrough from said flow line, and an alarm device including dielectric support means supported from the upper end portion of said pipe, first and second laterally spaced apart and depending elongated electrically conductive support members having their upper end portions mounted from said support means, an elongated float arm having one end pivot-

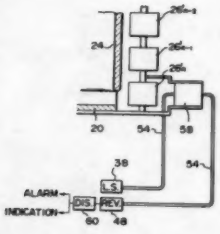
ally supported from the lower end portion of said first support member for limited oscillation of said arm about a horizontal axis transverse to said arm and with said arm generally horizontally disposed, the other end of said arm including an electrically conductive float supported therefrom electrically connected to the lower end portion of said first support member, the lower end of said second support member being disposed and in vertical registry with said float when said other end of said arm is disposed in its lower limit position and engageable by said float when said other end of said arm is swung upwardly toward is upper limit position, an elongated upstanding tension member having a lower end thereof anchored relative to said arm and the upper end thereof guidingly and shiftably supported from said support means for selective upward displacement relative thereto and including an abutment portion engageable with said support means to limit downward displacement of said tension member relative thereto, the limit of downward displacement of said tension member relative to said support means defining the lower limit of downward movement of the other end of said arm and said float, and electrically actuatable alarm means serially connected in an electrical circuit in which a source of electrical potential as well as said support members are serially connected.

4,398,187

PRESSURE MONITORING SYSTEM FOR A VACUUM CIRCUIT INTERRUPTER

Tomio Fukushima, Higashimine, and Shuzo Tanigaki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed May 26, 1981, Ser. No. 267,331
Claims priority, application Japan, May 27, 1980, 55-70330
Int. Cl.³ G08B 21/00
U.S. Cl. 340—626 **19 Claims**



1. A pressure monitoring system in a vacuum circuit interrupter including:

(a) a stationary electrode holder extending through a first metallic end plate into an evacuated housing and having a stationary electrode contact at an end thereof;

(b) a movable electrode holder extending through a second metallic end plate into the evacuated housing and having a movable electrode contact at an end thereof so as to be in contact with or separated from the stationary electrode contact;

(c) an arc shielding member surrounding the stationary and movable electrode contacts within the evacuated housing spaced between the first and second metallic end plates; and

(d) a plurality of capacitors located outside the evacuated housing and connected between the first metallic end plate and the arc shielding member and between the arc shielding member and the second metallic end plate for dividing the voltage, applied to both stationary and movable electrode contacts, equally among each of said capacitors, the improvement comprising:

(e) a light source;

(f) an electric field detecting member located on one of the capacitors for detecting a change in the electric field intensity within the evacuated housing dependent upon change in pressure within the evacuated housing and controlling the light from said light source according to the detected change in the electric field intensity; and

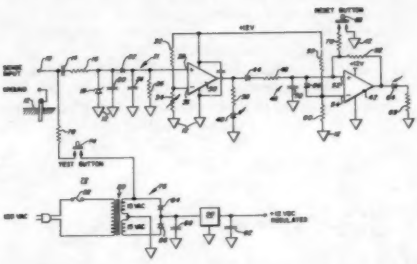
(g) a light receiving member for receiving the light from said electric field detecting member and converting it into an electrical signal according to the quantity of light received from said electric field detecting member.

4,398,188

GROUND CIRCUIT VOLTAGE DETECTOR

Donn L. Feigal, c/o Feigals, Inc., Main St., Pine Island, Minn. 55963, and Ronald R. Feigal, 4219 Second Ave. N.E., Seattle, Wash. 98105

Filed Oct. 7, 1981, Ser. No. 309,443
Int. Cl.³ G08B 21/00
U.S. Cl. 340—650 **13 Claims**



1. A voltage detector for monitoring the ground voltage developed in equipment and connected between the equipment and a separate ground connection, comprising:

means for sensing the voltage developed in the equipment;

means for comprising the sensed voltage to a first reference voltage and for providing an output proportional to the sensed voltage each time the sensed voltage exceeds the first reference voltage;

means for providing a warning indication each time the sensed voltage exceeds the first reference voltage;

means for comparing the output of the first comparing means to a second reference voltage; and

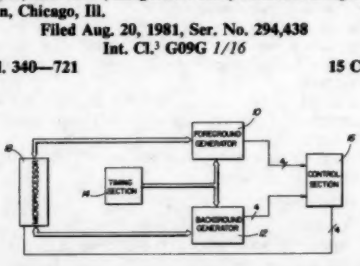
means for providing a sustained alarm indication if the output of the first comparing means exceeds the second reference voltage.

4,398,189

LINE BUFFER SYSTEM FOR DISPLAYING MULTIPLE IMAGES IN A VIDEO GAME

John J. Pasierb, Jr., Schaumburg, and Atish Ghosh, Glendale Heights, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Aug. 20, 1981, Ser. No. 294,438
Int. Cl.³ G09G 1/16
U.S. Cl. 340—721 **15 Claims**



1. A line buffer system for displaying a plurality of foreground objects and background on a monitor raster scan display screen used in a game to display a sequence of video pictures, each picture comprised of a plurality of parallel hori-

zontal lines and each line being digitalized by division into adjacent pixels and each line being displayed on the display screen during active video scan, comprising:

foreground memory means for storing object information in the form of blocks of digital data as foreground information in a foreground memory, each such block corresponding to a rectangular segment of the monitor screen displayable at a position on the screen that is selectable and changeable during the play of the game;

background memory means for storing background information in the form of blocks of digital data in a background memory, such blocks corresponding to selectable and changeable rectangular locations on the monitor screen;

buffer means;

transfer means for transferring sufficient foreground information to comprise a horizontal line on the monitor screen from said foreground memory means to said buffer means during active video scan of a picture containing said line, but prior to the time active video scan of said line on the screen has begun;

control means including means capable of controlling the intensity of the raster display in accordance with said data in said foreground memory means and said background memory means; and

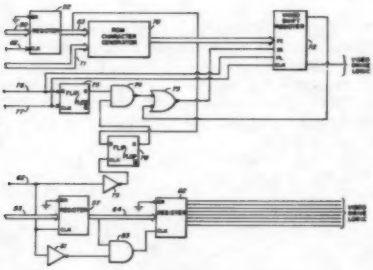
foreground output means for outputting said foreground information corresponding to said line from said buffer means in the form of a foreground data stream transmitted to said control means.

4,398,190

CHARACTER GENERATOR DISPLAY SYSTEM

Nicholas R. Long, Hudson, N.H.; William E. Peisel, Marlboro, Mass.; Joseph L. Ryan, Tuscon, Ariz.; John P. Stafford, Nashua, N.H., and Richard R. Watkins, Chelmsford, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 19, 1981, Ser. No. 235,821
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—728 **2 Claims**



1. A video control system for supplying both data characters and graphic characters in conjunction with visual attributes to video drive logic controlling the operation of a CRT video screen in a video terminal system having a timing control system, said video control system comprising:

random access memory means for storing character address codes at character-address-code addresses and for storing visual attribute codes, there being a visual-attribute-code address associated with each character-address-code address, each visual attribute code comprising attribute control bits and an attribute-change flag bit;

logic memory means responsive to binary address codes issued by said random access memory means for providing binary character codes including, alternatively, both binary data character codes and binary graphic character codes, the binary character codes comprising bits sufficient in number to match that required in a horizontal scan of a data character but not sufficient in number to match that required in a horizontal scan of at least certain graphic characters;

video information stream logic means receiving said binary character codes from said logic memory means and responsive to clock control signals generated by said timing control signals for converting said binary character codes to a serial video bit stream to be applied to said video drive logic, and repeating a most significant bit position logic level in said serial video bit stream upon occurrence of a graphic character flag bit in said binary address codes; and

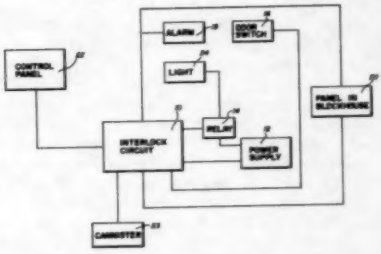
visual attribute logic means for receiving visual attribute codes from said random access memory means and responsive to a character clock control signal issued by said timing control system and to said attribute change flag bit for changing and holding a binary visual attribute code and for supplying said binary visual attribute code to said video drive logic until changed in response to an attribute-change flag bit in a subsequent visual attribute code.

4,398,191

DOOR INTERLOCK SYSTEM FOR RADIOACTIVE TESTING

Victor L. Schoepf, Carrollton, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 14, 1981, Ser. No. 283,247
Int. Cl.³ G08B *13/08*; H04Q *9/00*
U.S. Cl. 340—825.32 **3 Claims**



1. An interlock system for a test area having an access door, test equipment contained therein, and means for supplying power to the test equipment, said system comprising:

first switch means for connecting the test equipment to the means for supplying power;

indicator means for determining whether the access door is open;

first disabling means responsive to said indicator means for disconnecting the test equipment from the means for supplying power whenever the access door is open or whenever the access door is opened and closed after said first switch means is closed;

alarm means responsive to said first switch means for providing an indication when the means for supplying power is connected to the test equipment;

generator means for supplying activating pulses to the test equipment; and

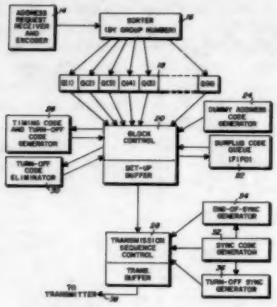
disabling means responsive to said generator means for disconnecting the means for supplying power from the test equipment whenever said activating pulses are absent.

4,398,192

BATTERY-SAVING ARRANGEMENT FOR PAGERS

Morris A. Moore, North Lauderdale, and William V. Braun, Pompano Beach, both of Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 4, 1981, Ser. No. 327,308
Int. Cl.³ H04B 5/04; H04Q 7/00
U.S. Cl. 340—825.44 13 Claims



1. A battery-saving arrangement for selectively addressable devices and comprising:

transmission means including first means for receiving two-word binary address codes, means for transmitting a sequence of binary signals, means coupled to the receiving means for sorting the received address codes according to predetermined groups of devices, first memory means coupled to the sorting means for storing the sorted address codes by groups, block control means coupled to the first memory means for assembling ones of the sorted and stored address codes into transmission blocks, second memory means coupled to the block control means for storing a first predetermined number of address codes of one of the respective groups of device address codes, first coding means coupled to the block control means for further encoding predetermined ones of the address codes stored in the second memory means, first generator means for generating two-word synchronizing code signals, said synchronizing codes having the same format as the address codes, and including second coding means for selectively further encoding selected ones of the synchronizing code signals, transmission sequence control means coupled to the block control means and to the first generating means for assembling blocks of address codes and synchronizing codes into a sequence and coupled to the transmission means for transmission; and

a plurality of selectively addressable devices, each device including means for receiving the transmission sequence, means for detecting one of the address codes, all of the further encoded address codes and all synchronizing codes, when said codes appear in the transmission sequence, and means for responding to the detection of said one address code.

4,398,193

CONTROL APPARATUS

Yasunobu Kuniyoshi, Tokyo, and Takashi Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,987
Claims priority, application Japan, Feb. 14, 1980, 55-17056; Feb. 14, 1980, 55-17057
Int. Cl.³ H04Q 9/00; H04B 9/00
U.S. Cl. 340—825.76 8 Claims

1. A control apparatus for controlling a plurality of functions, comprising:

first storage means for storing a plurality of control data entries;

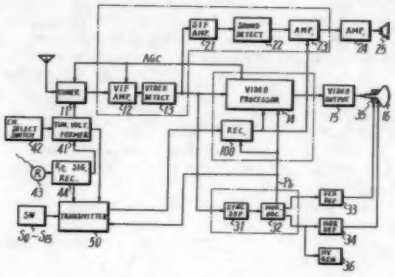
a plurality of control switch means;

control data changing means for changing each control data entry in said first storage means in response to the status of said plurality of control switch means;

test switch means for varying the amount of change of each control data entry by said control data changing means;

control data transmitting means for serially transmitting control signals corresponding to said plurality of control data entries in said first storage means;

second storage means;



control data receiving means for receiving said serially-transmitted control signals and storing said received control signals in said second storage means;

a plurality of digital-to-analog converting means for generating a plurality of analog control voltages corresponding to said plurality of control data entries, in response to said control signals stored in said second storage means; and

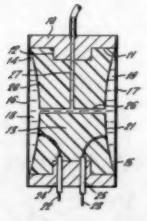
a plurality of voltage-controlled means for controlling said plurality of functions in response to said plurality of analog control voltages from said plurality of digital-to-analog converting means, respectively.

4,398,194

DIFFERENTIAL PRESSURE SENSING APPARATUS

James S. Johnston, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Great Britain

Continuation of Ser. No. 141,345, Apr. 18, 1980, abandoned. This application Feb. 25, 1982, Ser. No. 352,301
Claims priority, application United Kingdom, Apr. 26, 1979, 7914628
Int. Cl.³ G08C 19/10, 19/16; G01L 9/12
U.S. Cl. 340—870.37 10 Claims



1. A differential pressure sensing apparatus including a transducer having a body and comprising a pair of sensing chambers of substantially identical geometry and pressure response, each said chamber being defined by a diaphragm and an associated surface of the body, the diaphragm having a respective outer pressure sensing surface, and each chamber having capacitor plate means including the associated diaphragm and means on the associated body surface, whereby a corresponding deflec-

tion of each of the two diaphragms causes a corresponding change in the electrical capacity of the respective capacitor plate means,

the transducer further comprising fluid passage means between the two sensing chambers, and a fixed mass of a substantially non-compressible dielectric fluid filling said two chambers and the fluid passage means whereby a change in the differential pressure between the outer pressure sensing surfaces of the two diaphragms causes one diaphragm to deflect inwards relative to its associated sensing chamber and the other to deflect by a corresponding amount outwards relative to its associated sensing chamber,

the apparatus further including electrical signal generating means responsive to said capacitor plate means to provide at least respective signals representative of the electrical capacities of the two capacitor plate means, and means for receiving at least respective signals and for providing from such signals a compensation term which is representative of variations of the volume and hence the density of the fixed mass of said fluid and for further providing from such signals and said compensation term a value for the differential pressure which is substantially independent of variations with temperature in the dielectric constant of the dielectric fluid.

4,398,195

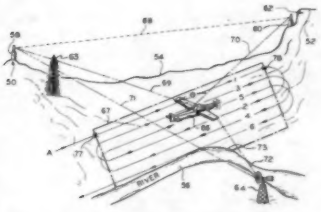
METHOD OF AND APPARATUS FOR GUIDING AGRICULTURAL AIRCRAFT

Paul K. Dano, Euless, Tex., assignor to Del Norte Technology, Inc., Euless, Tex.

Continuation-in-part of Ser. No. 53,771, Jul. 2, 1979, abandoned. This application Oct. 16, 1979, Ser. No. 85,284

Int. Cl.³ G01S *13/78*

U.S. Cl. 343—6.5 R **20 Claims**



1. A vehicular radar guidance system comprising memory means associated with said vehicle for storing an arbitrarily selected predetermined vehicle travel pattern, means responsive to the receipt of radar signals for continuously detecting distances between a vehicle and the two ends of a baseline, means responsive to the detected distances for continuously and automatically displaying a signal of a vehicular course which may be followed to inherently cause said vehicle to follow said predetermined travel pattern, and means onboard said vehicle for rejecting detected distances which are inconsistent with previously detected distances.

4,398,196

INSTANTANEOUS BROADBAND RADAR SIGNAL PULSE DETECTOR

Richard J. Wiegand, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

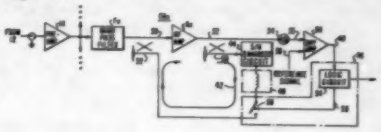
Filed Mar. 23, 1981, Ser. No. 246,501

Int. Cl.³ G01S *7/28*

U.S. Cl. 343—17.1 R **9 Claims**

1. A radar signal receiver including at least one pulse detection channel operative to process received radar signals having carrier frequencies within a predetermined broadband microwave channel frequency range to detect the presence of a radar pulse, each pulse detection channel comprising: an RF amplifier having an input and an output and operative to amplify received RF signals; means for detecting a radar pulse from the amplified RF signals of said RF amplifier and for generating a pulse detection signal in response to said detection; and an improvement of apparatus for increasing the sensitivity of detection of radar pulses especially in the presence of noise signals distributed within the corresponding broadband channel frequency detection range, said apparatus comprising:

a feedback signal path coupling the output to the input of said RF amplifier;



a signal-to-noise (S/N) enhancer circuit disposed in said feedback signal path and operative to adaptively focus a narrow enhancement bandwidth about the frequency of an input signal, which has a power level greater than a predetermined threshold level, for enhancing signals which have frequencies within said enhancement bandwidth and for attenuating signals which have frequencies outside of said enhancement bandwidth, said enhanced and attenuated signals being recirculated through said RF amplifier utilizing said feedback signal path; and

means, disposed in said feedback signal path, for inhibiting, at times, the recirculation of said signals through said feedback signal path as governed by said pulse detection signal.

4,398,197

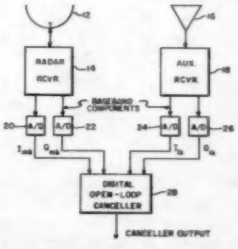
DIGITAL SIDELOBE CANCELLER WITH REAL WEIGHTS

George M. Dillard, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1981, Ser. No. 301,088

Int. Cl.³ H04B *7/00*

U.S. Cl. 343—100 LE **7 Claims**



1. A real-weight digital open-loop coherent sidelobe canceller for a radar system having a main radar receiver and at least one auxiliary radar receiver comprising:

a first memory having first and second inputs for receiving signals representing a sequence of n pairs of digital sample values, I_{mk} and Q_{mk}, the sample values I_{mk} and Q_{mk} representing, respectively, the digitized in-phase components and quadrature phase components of the output of the main radar receiver;

a second memory having third and fourth inputs for receiving signals representing a sequence of n pairs of digital sample values I_{1k} and Q_{1k}, the sample values I_{1k} and Q_{1k} representing, respectively, the digitized in-phase compo-

nents and quadrature phase components of the output of said auxiliary radar receiver;

computing means connected to said first and second memories for forming signals representing the weighting coefficients W_1, W_2, V_1 and V_2;

a first multiplier means connected to said computing means and to said second memory for forming signals representing the products W_1I_{1k};

a second multiplier means connected to said computing means and to said second memory for forming signals representing the products W_2Q_{1k};

a third multiplier means connected to said computing means and to said second memory for forming signals representing the products V_1I_{1k};

a fourth multiplier means connected to said computing means and to said second memory for forming signals the representing the products V_2Q_{1k}; and

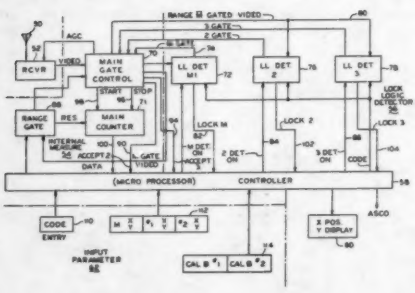
output means connected to said first memory and to said first, second, third and fourth multiplier means for forming a first signal set, $I_{mk}-[W_1I_{1k}+W_2Q_{1k}]$, and a second signal set $Q_{mk}-[V_1I_{1k}+V_2Q_{1k}]$ said first and second signal sets representing, respectively, sidelobe cancelled in-phase channel signals and sidelobe cancelled quadrature phase signals.

4,398,198

PULSE-HYPERBOLIC LOCATION SYSTEM USING THREE PASSIVE BEACON MEASUREMENTS

Paul K. Dano, Euless, and Eric C. Ko, Carrollton, assignors to Del Norte Technology, Inc., Euless, Tex.

Filed Oct. 28, 1980, Ser. No. 201,506
Int. Cl.³ G01S *1/24*
U.S. Cl. 343—103 **22 Claims**



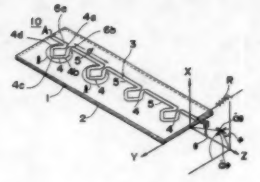
20. A radar location system comprising at least three stations transmitting and receiving on a particular frequency, means at a first of said stations for transmitting a first and continuous stream of pulses formed by interrupting said frequency at a cyclically recurring station identifying rate for an indefinite period of time during which said system is operating, means at a second of said stations responsive to the receipt of a predetermined number of pulses in said first continuous and indefinite stream of pulses for thereafter repeating pulses in said first stream by pulses by interrupting said frequency at a rate which identifies the second station, thereby forming a second stream of pulses lagging after said first stream of pulses by a time period at least partially reflecting the distance between said first and said second stations, and means at a third of said stations responsive jointly to the receipt of said first and second stream of pulses recurring at the rate which identifies the first station for calculating the location of said third station.

4,398,199

CIRCULARLY POLARIZED MICROSTRIP LINE ANTENNA

Toshio Makimoto, 15-3, Shinsenrinishimachi 2-chome, Toyonaka-shi, Osaka, and Sadahiko Nishimura, 2-51, Tamatsukurimotomachi, Tennoji-ku, Osaka, both of Japan

Filed Mar. 5, 1981, Ser. No. 240,610
Claims priority, application Japan, Mar. 10, 1980, 55-30797
Int. Cl.³ H01Q *1/38*
U.S. Cl. 343—700 MS **3 Claims**



1. A circularly polarized microstrip line antenna for receiving or transmitting a signal of a particular wavelength comprising:

a dielectric substrate having a ground plate provided on one surface thereof and having a microstrip line formed on another surface thereof;

wherein said microstrip line has an omega shaped fundamental portion composed of a loop portion and a pair of straight portions;

and wherein said loop portion is a regular polygon having a length λg equal to said particular wavelength;

and wherein said loop portion is symmetrical about an axis which is on one of said surfaces of said substrate and is at right angles to said straight portions of said microstrip line;

and wherein an angle α is defined by one of said pair of straight portions and a side of the polygon connected to said straight portion, said angle α being obtained by the equation:

$$\sin\theta m \cdot \cot\alpha \cdot \cos\left(\frac{\pi}{2}\eta \cdot \cos\theta_m \cdot \cos\alpha\right) +$$

$$\eta\cos\theta_m \cdot \cos\alpha \cdot \sin\left(\frac{\pi}{2}\eta \cdot \cos\theta_m \cdot \cos\alpha\right) - 1 = 0$$

where θ_m is the direction of a main beam of said antenna and η is an effective wavelength reduction rate thereof;

and wherein a total length of said pair of straight portions d is obtained by the equation:

$$d=\lambda g/(1-\eta \cos \theta_m).$$

4,398,200

FEED APERTURES WITH CROSSPOLARIZATION COMPENSATION FOR LINEAR POLARIZATION

Raymond J. Meier, King of Prussia, Pa., assignor to General Electric Co., Philadelphia, Pa.

Continuation of Ser. No. 168,361, Jul. 10, 1980, abandoned. This application Nov. 6, 1981, Ser. No. 319,389
Int. Cl.³ H01Q *19/13, 13/02*
U.S. Cl. 343—756 **40 Claims**

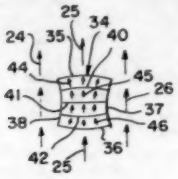
1. An antenna system, comprising:

a reflector;

at least a pair of feed horns located in the focal region of said reflector, said feed horns being positioned adjacent each other with the axis of each horn pointed at said reflector;

means for radiating beams in the same frequency band from said pair of feed horns at said reflector effective to reflect a pair of corresponding beams from said reflector; and

compensation means incorporated in the structure of each of said feed horns, each of said compensation means being



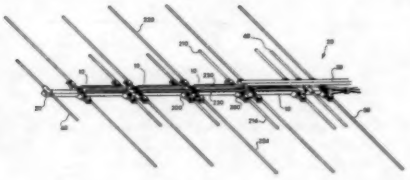
configured to alter the beam radiated from its feed horn in a manner which reduces crosspolarization components in the corresponding reflected beam, said reduction of cross-polarization components being effective to provide substantially linear polarization in said pair of reflected beams in mutually orthogonal directions.

4,398,201

ANTENNA DIRECTOR AND METHOD THEREFOR

John R. Winegard, Evergreen, and Carey W. Shelledy, Wheat Ridge, both of Colo., assignors to Winegard Company, Evergreen, Colo.

Filed Mar. 16, 1981, Ser. No. 244,030
Int. Cl.³ H01Q 21/12
U.S. Cl. 343—815 13 Claims



1. A VHF antenna (30) having a plurality of improved directors (10) mounted on the front of the boom (20) of said antenna, each of said improved directors (10) comprising:

a first insulator (200) mounted to said boom (20),

a first element (220) connected to said first insulator (200), said first element (220) having two half sections (222, 224) with the inboard ends (240) of each half section being connected to said first insulator (200), the aforesaid ends (240) being separated from each other on said first insulator (200) by a first predetermined distance (410), each of said half sections (222, 224) of said first element (220) having an electrical length of substantially one-half wavelength at a frequency in the high end of the VHF band,

a second insulator (200) mounted to said boom (20),

a second element (210) connected to said second insulator (200) and positioned in the same plane as said first element (220), said second element (210) having an electrical length of substantially one-half wavelength at a frequency in the high end of the VHF band, said second element (210) having two half sections (212, 214) with the inboard ends (240) of each half section being connected to said second insulator (200), the aforesaid ends (240) being separated from each other on said second insulator (200) by said first predetermined distance (410), said second element (210) being spaced (430) from said first element (220),

a pair of opposing phasing lines (230) parallel to the longitudinal length of said boom (200) and located near said boom a second predetermined distance (400), said parallel phasing lines (230) being separated from each other by said first predetermined distance (410), each phasing line (230) electrically interconnecting said inboard ends (240) of said first and second element half sections located on the same side of said boom (20), each of said phasing lines (230) being elongated flat surfaces (700) oriented with the flat surface (700) of each phasing line (230) directly opposing the other,

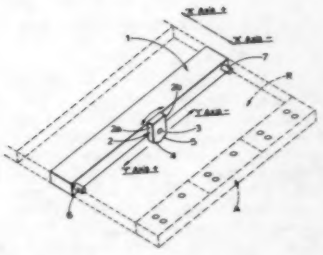
said first and second predetermined distances (400, 410) and said spacing (430) between said first and second elements (210 and 220) effectuating a predetermined degree of capacitance (C_T) between said phasing lines (230) and between said phasing lines (230) and said boom (20) to provide sufficient tuning to effectuate half-wavelength resonating currents (I_1, I_2 and I_3) in the first half section (222) of said first element (220), the second half section (224) of said first element (220), and in said second element (210) that are substantially in phase and additive.

4,398,202

WRITING DEVICES FOR PLOTTING AND RECORDING APPARATUS

Kenneth J. Henderson, Crowthorne, England, assignor to Bryans Southern Instruments Ltd., Mitcham, England

Filed Jan. 15, 1982, Ser. No. 339,639
Claims priority, application United Kingdom, Jan. 15, 1981, 8101182
Int. Cl.³ G01D 9/28
U.S. Cl. 346—29 8 Claims



1. A recording or plotting apparatus comprising a gantry which is movable across a record surface along a first axis; a pen holder mounted on the gantry for movement with respect to the gantry along a second axis perpendicular to the first axis and for rotation into a plurality of writing stations; a plurality of writing tips mounted on said penholder, a respective one of which is placed in a writing position when the pen holder is at one of the writing stations; actuation means for moving said gantry and said penholder along said first and second axis respectively; and means located on said apparatus and operable by movement of the gantry or pen holder for rotating the pen holder from one writing station to another.

4,398,203

THERMO-OPTICAL METHOD FOR WRITING INFORMATION AND AN INFORMATION MEDIUM FOR THE APPLICATION OF SAID METHOD

Jean Cornet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 7, 1981, Ser. No. 291,076
Claims priority, application France, Aug. 13, 1980, 80 17845
Int. Cl.³ G01D 15/34; G11B 7/26
U.S. Cl. 346—135.1 19 Claims

7. An information medium to be written by exposure to a beam of incident light radiation of predetermined wavelength, said medium being constituted by a ductile metal film layer

associated with a contiguous layer of thermodeforming organic substance, wherein said ductile metal layer is partially permeable to said radiation, an optical cavity having parallel faces being formed between a reflecting metal film layer and said ductile metal layer; the optical length of said cavity being adjusted for insuring antireflection at said wavelength of said incident light radiation; the thermodeforming of said organic substance causing detuning of said optical cavity for self regulating said exposure.

4,398,204

CIRCUIT FOR OPERATING RECORDING NOZZLES

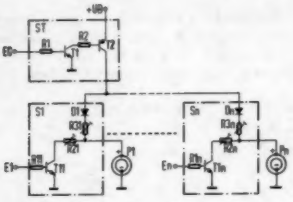
Klaus Dietrich, Stockdorf; Reiner Lichti, Germering, and Günter Rosenstock, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,971

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036922

Int. Cl.³ G01D *15/18*; H01L *41/10*

U.S. Cl. 346—140 **8 Claims**



1. A circuit for operating a plurality of recording nozzles in an ink mosaic recorder, each said recording nozzle having an associated channel which is cylindrically surrounded by a piezoelectric transducer having a diameter which expands upon the application of a voltage to said transducer having a polarity opposite to a direction of polarity of said transducer and which contracts upon the application of a voltage to said transducer having a polarity corresponding to said direction of polarization of said transducer, said circuit comprising:

a charging circuit for selectively connecting said transducers to a voltage source in a rest state, said voltage source being common to all said transducers and having a polarity in said direction of polarization of said transducers for causing said transducers to assume a state of contracted diameter;

a plurality of discharging circuits individually connected to said transducers and each operable by a separate control unput for discharging the transducer connected thereto to zero volts for causing said transducers to assume a state of expanded diameter for a selected period of time; and

a switching means in said charging circuit for selectively interrupting operation of said charging circuit independently of the operation of said discharging circuit.

4,398,205

GATE TURN-OFF DEVICE WITH HIGH TURN-OFF GAIN

Gordon B. Spellman, Mequon; Herman P. Schutten, Elm Grove, and Stanley V. Jaskolski, Sussex, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 972,443, Dec. 22, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 184,688

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **3 Claims**

1. A monolithically integrated turn-off semiconductor switch device comprising:

a pair of main terminals for carrying load current;

a control terminal which enables said device to be turned ON by a signal current of one polarity and turned OFF by a signal current of opposite polarity;

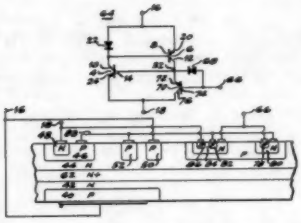
first non-regenerative switch means comprising a power transistor formed vertically in a substrate by first, second, and third regions of alternating conductivity types;

a diode formed by fourth and fifth regions of opposite conductivity types in series with the aforementioned regions of said vertical transistor but separated therefrom by a sixth region of said substrate doped to provide low minority carrier lifetimes therein and prevent vertical regenerative action between said diode and said vertical transistor;

said fourth region of said diode being disposed on a bottom surface of said substrate and ohmically connected to one of said main terminals and;

said third region of said vertical transistor being disposed on the top surface of said substrate and ohmically connected to the other of said main terminals;

second non-regenerative switching means comprising a transistor of opposite conductivity type to said vertical transistor laterally formed in said substrate by said first region of said vertical transistor, and by a seventh and an eighth regions of alternating conductivity types, said seventh region being disposed on the top surface of said substrate and ohmically



connected to said one of said main terminals, and said eighth region also being disposed on the top surfaces of said substrate;

said first and second individually non-regenerative switching means being parasitically isolated from each other on said substrate, but regeneratively coupled to supply each other's base drive current and form a regenerative current loop therebetween, and said control terminal being connected to said regenerative coupling such that application of signal current of said one polarity initiates regenerative loop current between said first and second individually non-regenerative switching means; and

third non-regenerative switching means comprising a third transistor monolithically integrated laterally in said substrate and parasitically isolated from said vertical and lateral transistors and said diode and comprising ninth, tenth and eleventh regions of alternating conductivity types,

said third switching means having ohmic connections to said regenerative loop and said other of said main terminals such that upon application of base drive signal current thereto being rendered conducting to shunt current from said regenerative loop to thereby render said first switching means non-conductive to turn off said device.

4,398,206

TRANSISTOR WITH INTEGRATED DIODE AND RESISTOR

John M. S. Neilson, Mountaintop, Pa., assignor to RCA Corporation, New York, N.Y.

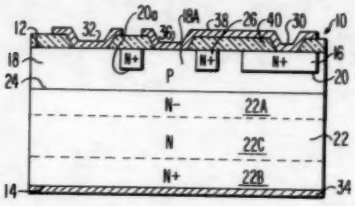
Filed Feb. 11, 1981, Ser. No. 233,488

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—46 **4 Claims**

1. A semiconductor device including a transistor, a diode and a resistor, said device comprising (a) a body of semiconductor material having first and second surfaces generally

parallel to each other, (b) a first region of one conductivity type material extending into said body from said first surface and a second region of opposite conductivity type material extending into said body from said second surface, (c) an emitter region of said opposite type conductivity material extending into said first region from said first surface and forming a first PN junction therewith, said first and second regions forming a second PN junction, and (d) an isolation region of said



opposite conductivity type material extending into said first region from said first surface and forming a third PN junction with said first region, whereby said first region is separated into (1) a base portion cooperating with said emitter region and said second region to form a transistor and (2) an electrode portion cooperating with said second region to form a diode, said base portion and said electrode portion being ohmically connected by a portion of the first region disposed between the second PN junction and third PN junction.

4,398,207

MOS DIGITAL-TO-ANALOG CONVERTER WITH RESISTOR CHAIN USING COMPENSATING "DUMMY" METAL CONTACTS

Marcian E. Hoff, Jr., Sunnyvale, and John M. Huggins, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 973,101, Dec. 26, 1978, abandoned, which is a division of Ser. No. 717,442, Aug. 24, 1976, Pat. No. 4,146,882. This application May 12, 1981, Ser. No. 263,040

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—51 **8 Claims**

1. An MOS array disposed on a silicon substrate for converting a digital signal to an analog signal including:

a first and second elongated, generally parallel, spaced-apart, doped regions in said substrate, each for forming a resistance means;

a first and second, elongated, generally parallel, spaced-apart strips of polysilicon disposed between and parallel to said spaced-apart first and second regions, said first strip adjacent to said first region and said second strip adjacent to said second region;

a first and a second conductive line disposed generally transverse to and insulated from said strips and said first and second regions, said conductive lines crossing said regions and said strips;

third and fourth doped regions in said substrate disposed between said spaced-apart first and second strips, said third region being disposed below said first line and said fourth region being disposed below said second line;

contact means for coupling said third doped region with said first line and for coupling said fourth region with said second line;

whereby one of said first and second regions may be coupled to said lines through said third or fourth regions by applying a potential to one of said first and second strips.

4,398,208

INTEGRATED CIRCUIT CHIP PACKAGE FOR LOGIC CIRCUITS

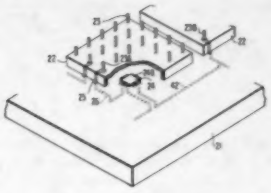
Hiroshi Murano, and Moritoshi Akino, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,226

Claims priority, application Japan, Jul. 10, 1979, 54-87022

Int. Cl.³ H01L *23/52, 23/36, 23/04, 23/12*

U.S. Cl. 357—81 **7 Claims**



1. An integrated circuit (IC) chip package for logic circuits comprising:

a substrate;

a plurality of IC chips mounted on the surface of the substrate;

at least one cover provided on said substrate surface, said cover having a concave rectangular bracket-shaped cross section and positioned so as to cover at least one of said IC chips;

a plurality of external terminals formed on the upper surface of said cover;

a plurality of first signal lines electrically connected to each of the external terminals and positioned independently on said cover; and

a plurality of second signal lines for electrically connecting selected first signal lines to selected IC chips, said at least one cover comprising at least first and second covers each covering different ones of said plurality of IC chips, at least one of said second signal lines being embedded in said substrate and electrically connecting an IC chip under said first cover with a first signal line on said second cover.

4,398,209

METHOD AND APPARATUS FOR DIGITAL CONTROL OF A SEPARATELY CODED COLOR TELEVISION SIGNAL

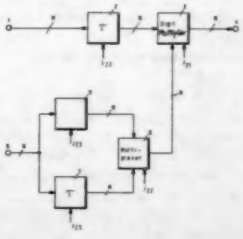
Herbert Robitzsch, Erzhausen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 27, 1981, Ser. No. 258,026

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3015932

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—27 **7 Claims**



1. Method for digital control of a digital color television

signal having individually coded luminance and chrominance signals, comprising the steps of:

generating a first and second control signal, wherein

said first control signal has a first predetermined bandwidth and said second control signal has a second predetermined bandwidth narrower than said first predetermined bandwidth;

and controlling the amplitude of said luminance and chrominance signals with said first and second control signals, respectively.

4,398,210

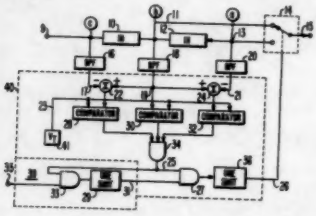
IMPULSE NOISE DETECTION CIRCUIT FOR TV SIGNALS

Frank C. Liu, Phoenix, Ariz., and Yih-Sien Kao, Cranbury, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 275,711

Int. Cl.³ H04N *5/21, 9/535*

U.S. Cl. 358—36 **10 Claims**



1. Detection circuitry for detecting electrical noise in a baseband composite television video signal including luminance and chrominance components formatted in horizontal image segments, comprising:

means for successively temporally aligning at least three successive horizontal image segments having an input terminal for application of said composite video signal and having first, second, and third video signal output terminals, wherein output signal from the third output terminal is delayed from output signal from the second output terminal, and the output signal from the second output terminal is delayed from output signal from the first output terminal;

a source of reference signal;

means, including a first subtraction circuit having first and second input terminals connected to said first and second output terminals, for algebraically subtracting the video signal at the first output terminal from the video signal at the second output terminal and producing a first difference signal;

means including a second subtraction circuit having first and second input terminals connected to said second and third output terminals, for algebraically subtracting the video signal at the third output terminal from the video signal at the second output terminal and producing a second difference signal;

first and second comparator circuits for comparing said first and second difference signals respectively against said reference signal, said comparators producing at respective output terminals thereof respective prescribed output signals whenever the respective difference signal is greater than the reference signal;

means connected to the output terminals of said first and second comparator circuits, for producing a control signal whenever the first and second comparator circuits concurrently produce said prescribed output signals.

4,398,211

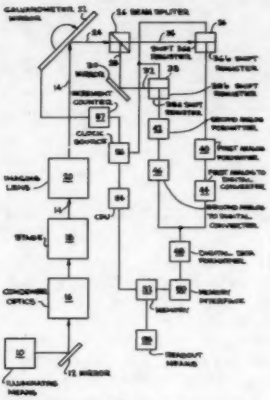
SOLID STATE OPTICAL MICROSCOPE

Ian T. Young, Pleasanton, Calif. (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

Filed Jan. 7, 1981, Ser. No. 222,866

Int. Cl.³ H04M *7/18*

U.S. Cl. 358—93 **7 Claims**



1. A solid state optical microscope, comprising:

(a) means for illuminating an object, thereby producing, along a first imaging path, image light propagating from said object;

(b) means for supporting said object;

(c) means for serially scanning said object in either one of two orthogonal directions, said scanning means being disposed along said first imaging path, and transmitting said image light to a second imaging path;

(d) an imaging lens disposed along said first imaging path between said object and said scanning means, said imaging lens providing refraction of said image light;

(e) a beam splitter disposed along said second imaging path, said beam splitter substantially splitting said image light into a first half-image light along a third imaging path, and a second half-image light along a fourth imaging path;

(f) a multiphase clock source having an adjustable frequency;

(g) a first charge-coupled photodiode array, said first array being coupled with said clock source and disposed along said third imaging path, said first array serving to accumulate charges and produce a first signal corresponding to the intensity of said first image light and scan in the orthogonal direction not scanned by said scanning means during periods determined by said clock source;

(h) a second charge-coupled photodiode array, said second array being coupled with said clock source and disposed along said fourth imaging path, said second array serving to accumulate charges and produce a second signal corresponding to the intensity of said second half-image light and scan in the orthogonal direction not scanned by said scanning means during periods determined by said clock source;

(i) means for processing said first and second signals, and means being coupled to said first and second arrays;

(j) a memory coupled to said processing means for storing said processed signals received from said processing means, and storing programmed instructions that set parameters which determine the scanning rates of said scanning means and said first and second arrays; and

(k) means for displaying a video image characteristic of said object, said means being coupled with said memory.

4,398,212

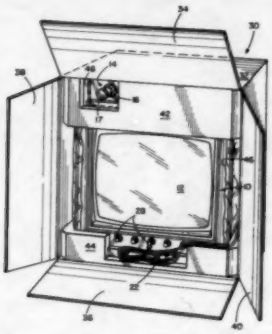
SHIPPING CONTAINER FOR A CLOSED CIRCUIT TELEVISION SYSTEM

Frank Serry, Arlington Heights, and Edward P. O'Connor, Glen Ellyn, both of Ill., assignors to VCS, Inc., Carol Stream, Ill.

Filed Aug. 31, 1981, Ser. No. 297,519

Int. Cl.³ H04M 7/18

U.S. Cl. 358—93 **11 Claims**



1. In a container for shipping a closed circuit television system of the type having parts including a camera having a lens mounted thereto, a monitor having a screen for displaying a picture, a video cable for connecting the camera to the monitor, and a power supply cord for delivering power to the system, said container comprising a box for holding said system and having a front end for opening and closing, packing inserts within the box for captivating said parts and maintaining the parts in respective positions within the box, and means for holding the parts and inserts in assembly, the improvement wherein said parts are assembled with said monitor being held in position within said box so that the screen of the monitor faces said front end whereby the screen is viewable through said front end when the front end is open, said lens of said camera being held in position in the box so that the lens is directed toward said front end whereby the lens is exposed to the exterior of the box when the front end is open, said cable being connected between the camera and the monitor, and said cord being accessible for engagement with an external power supply whereby said system can be operated and viewed while disposed in said box without movement of packing inserts and of the means for holding of the parts in assembly.

4,398,213

X-RAY DIAGNOSTIC INSTALLATION FOR PROVIDING SUBTRACTION IMAGES

Joerg Haendle, Erlangen; Wolfgang Maass, Nuremberg, and Hans-Dieter Wolf, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

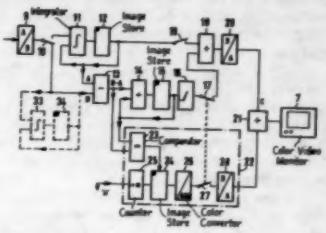
Filed Apr. 9, 1981, Ser. No. 252,299

Claims priority, application Fed. Rep. of Germany, May 12, 1980, 3018129

Int. Cl.³ H04N 5/32

U.S. Cl. 358—111 **9 Claims**

1. An x-ray diagnostic installation operable to produce video images for representing the results of an x-ray examination, and including a first image store, a difference stage connected with the output of the first image store for the purpose of providing subtraction images through difference formation, and a monitor, wherein the improvement comprises a second image store (15), a first adder (14) connected with the output of the difference stage (13), and connected with the second image store (15), so that, in the second image store (15), the image point data from the difference stage (13) for successive subtraction images are summed to provide a resultant image, the output of



the second image store (15) being connected with said monitor (7) for display of such resultant image.

4,398,214

WIRED TELEVISION BROADCASTING SYSTEM

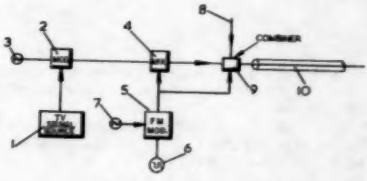
Eric J. Gargini, West Drayton, England, assignor to Communications Patents Limited, London, England

Filed Jul. 1, 1981, Ser. No. 279,664

Claims priority, application United Kingdom, Jul. 5, 1980, 8022111

Int. Cl.³ H04N 7/16

U.S. Cl. 358—118 **6 Claims**



1. A wired television system comprising a source of television signals supplying signals to a transmission network, a plurality of subscriber stations connected to the network, means for preventing reception of transmitted signals by at least one subscriber station, and means for overriding the preventing means to enable said at least one subscriber to receive said transmitted signals, characterised in that the preventing means comprise means for heterodyning television signals and a scrambling signal to provide said transmitted signals, and the overriding means comprise means for transmitting the scrambling signal over the transmission network, and means associated with the subscriber station for receiving the transmitted signals and the scrambling signal and for heterodyning the transmitted signals and the scrambling signal to recover the modulated television signals.

4,398,215

VIDEO SIGNAL PROCESSING SYSTEM

Hiroshi Osaka, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1980, Ser. No. 182,330

Claims priority, application Japan, Sep. 3, 1979, 54-111695

Int. Cl.³ H04N 7/16

U.S. Cl. 358—120 **7 Claims**

1. A video signal processing system in a wireless pay-television system wherein a television video signal is encoded by an encoder, the coded signal is transmitted to subscribers' ends, and the coded signal received at the subscribers' ends is decoded into an ordinary video signal by decoders, said video signal having a video component and a synchronizing signal component,

which system is characterized in that said encoder processes and encodes the television video signal by inverting said synchronizing signal component thereof with reference to a pedestal level and amplifying said synchronizing signal component so that it is higher than said video component and by reducing the number of horizontal synchronizing signal components so that one of the horizontal synchronizing signal components remains for a plurality of lines, said encoder comprising:

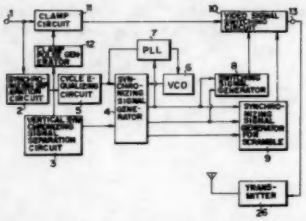
a synchronizing separation circuit for separating a composite synchronizing signal from the television video signal;

a vertical synchronizing signal separating circuit driven by the composite synchronizing signal to produce a vertical synchronizing signal;

a cycle equalizing circuit driven by the composite synchronizing signal to produce a continuous wave signal having a cycle equal to that of a horizontal synchronizing signal;

a clock signal generating circuit for producing a clock signal;

a synchronizing signal generating circuit responsive to the vertical synchronizing signal, the continuous wave signal



and the clock signal to produce at least a horizontal drive signal, a vertical drive signal and the composite synchronizing signal;

a switching signal generating circuit for producing a switching signal in response to the horizontal and vertical drive signals, a pulse duration of the switching signal being selected so as to cover the horizontal synchronizing signal and the vertical synchronizing signal including the equalizing pulses in said composite synchronizing signal but exclude a color burst signal and the video signal component;

a scrambler signal generating circuit responsive to the horizontal drive signal, the vertical drive signal and the composite synchronizing signal for mixing the horizontal synchronizing signal having a frequency of the horizontal drive signal divided by an integer and the vertical synchronizing signal including the equalizing pulses to produce a scrambling synchronizing signal; and

a video signal switching circuit driven by the switching signal to selectively output the video signal or the scrambling synchronizing signal.

4,398,216

MULTIPLE SIGNAL TRANSMISSION METHOD AND SYSTEM, PARTICULARLY FOR TELEVISION

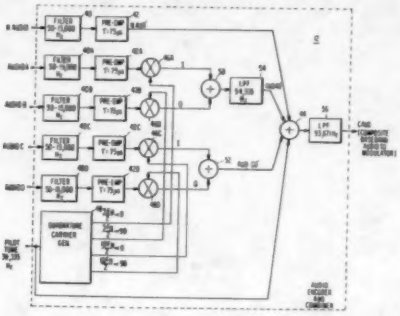
Robert W. Field, Fountain Valley; Ronald R. Gerlach, Mission Viejo; Clarence D. Perr, Brea, and Robert S. Block, Marina Del Ray, all of Calif., assignors to Telease, Inc., Los Angeles, Calif.

Filed Sep. 19, 1980, Ser. No. 188,738
Int. Cl.³ H04N 7/16, 7/04
U.S. Cl. 358—121 **62 Claims**

12. A method of operating a television system comprising the steps of:

transmitting a television audio program signal and a television video program signal within respective normal television audio and video signal frequency bands of an overall television frequency band allocated for transmission of a single television channel, said audio and video program signals being transmitted at respective normal audio and normal video center frequencies assigned for normal transmission of the respective audio and video signals within said normal television audio and video frequency bands;

simultaneously transmitting at least two additional user selectable audio signals within said overall television frequency band at at least one center frequency lying within the television audio frequency band, said at least one center frequency being displaced from the normal audio center frequency by an amount such that, in the transmission thereof, the two additional audio signals at said at least one center frequency do not interfere with the television audio or video program signals and do not exceed the limits of the overall television frequency band.



4,398,217

METHOD OF AND ARRANGEMENT FOR DIGITIZING A TIME-DISCRETE VIDEO SIGNAL USING A PICTURE TRANSFORM CODING

Joseph H. Peters, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,235
Claims priority, application Netherlands, Apr. 7, 1980, 8003873
Int. Cl.³ H04N 7/12
U.S. Cl. 358—138 **7 Claims**

1. A method of digitizing a time-discrete video signal, comprising the following steps:

(a) composing a video group consisting of a finite number of N video signal samples x(n);

(b) transforming this video group into a group of coefficients consisting of N coefficients y(m), which are each equal to the sum of weighted versions of the video signal samples x(n) of the video group and wherein n, m=1, 2, 3, . . . N;

(c) adaptive coding of each of the coefficients y(m) of the group of coefficients by carrying out the following substeps:

c(1). comparing the absolute value of the group of coefficients with a number of classification groups A(j) wherein j=1, 2, 3 . . . M, each consisting of the positive elements a(j,m) and the order j being assigned to the group A(j) and a(j+1,m)≧a(j,m), while a bit-assignment group B(j) consisting of the positive elements b(j,m) is associated with each classification group A(j);

c(2). determining the classification group A(j) of the least possible order for which it holds that for each value of m the absolute value of y(m) is smaller than a(j,m);

c(3). converting the absolute value of each of the coefficients y(m) into a coefficient code word z(m) which comprises a number of bits characterized by the element b(j,m) of the bit-assignment group B(j) associated with the selected classification group A(j);

(d) generating an order code word R(j) which characterizes the order of the selected classification group A(j).

4,398,218

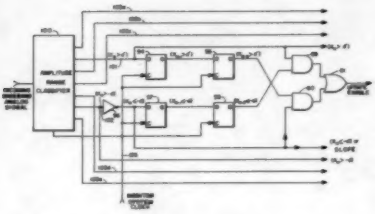
SIGNAL MONITOR SYSTEM

William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 102,303, Dec. 10, 1979, abandoned, which is a division of Ser. No. 825,705, Sep. 1, 1977, Pat. No. 4,207,523. This application Aug. 6, 1981, Ser. No. 290,647

Int. Cl.³ H03K 5/153; G01R 19/165

U.S. Cl. 328—150 **12 Claims**



1. An intended reference level crossing detector means, adapted to receive a data signal formed as a sequence of data samples, having a crossing detector output, said reference level crossing detector means comprising:

an incoming signal amplitude range classifier for determining whether said data samples are within certain amplitude ranges and having first and second classifier outputs, said incoming signal amplitude range classifier being capable of providing (i) as a first classifier output signal an indication for each said data sample, at said first classifier output, whether that said data sample has a value that is within a first selected range, and providing (ii) as a second classifier output signal an indication for each said data sample, at said second classifier output, whether that said data sample has a value that is within a second selected range;

a high range storage means having a high range storage means input and a high range storage means output, said high range storage means being capable of providing as a high range storage means output signal an indication, at said high range storage means output, whether a said data sample, preceding that said data sample corresponding to a current value of said first classifier output signal, had a value that was within said first selected range, said high range storage means input being connected to said first classifier output;

a low range storage means having a low range storage means input and a low range storage means outut, said low range storage means being capable of providing as a low range storage means output signal an indication, at said low range storage means output, whether a said data sample, preceding that said data sample corresponding to a current value of said second classifier output signal, had a value that was within said second selected range, said low range storage means input being connected to said second classifier output;

a falling pattern AND logic gate means having first and second falling pattern AND logic gate means inputs and a falling pattern AND logic gate means output, said first falling pattern AND logic gate means input being connected to said second classifier output and said second falling pattern AND logic gate means input being connected to said high range storage means output;

a rising pattern AND logic gate means having first and second rising pattern AND logic gate means inputs and a rising pattern AND logic gate means output, said first rising pattern AND logic gate means input being connected to said first classifier output and said second rising pattern AND logic gate means output being connected to said low range storage means output; and

a combining OR logic gate means having first and second combining OR logic gate means inputs and a combining OR logic gate means output, said first combining OR logic gate means input being connected to said falling pattern AND logic gate means output and said second combining OR logic gate means input being connected to said rising pattern AND logic gate means output.

4,398,219

SWITCHING APPARATUS FOR THE RECORDING AND REPRODUCING OF PCM OR VIDEO SIGNALS

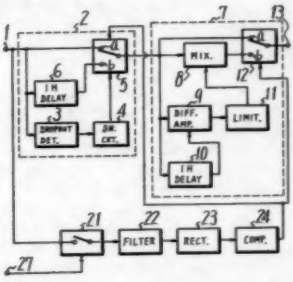
Nobuyuki Yasuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,919

Claims priority, application Japan, Nov. 6, 1980, 55-156240

Int. Cl.³ H04N 5/76

U.S. Cl. 358—167 **7 Claims**



1. A switching apparatus for PCM or video signals, comprising:

(a) an input terminal supplied with a PCM signal or a video signal;

(b) an output terminal;

(c) a first means coupled to said input terminal for compensating a drop-out contained in said video signal when said video signal is supplied to said input terminal;

(d) a second means coupled to said input terminal for detecting a specific information signal contained in said PCM signal when said PCM signal is supplied to said input terminal; and

(e) a third means coupled to said second means for switching so as to derive said PCM signal from said input terminal to said output terminal without through said first means in response to an output of said second means.

4,398,220

CIRCUIT FOR DETECTING THE OPERATIONAL STATE OF A TELEVISION RECEIVER

Tatsuaki Satoh, Kumagaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 24, 1981, Ser. No. 286,674

Claims priority, application Japan, Sep. 5, 1980, 55-123006; Sep. 5, 1980, 55-123007; Sep. 5, 1980, 55-123008

Int. Cl.³ H04N 5/50

U.S. Cl. 358—188 **8 Claims**

1. A circuit for detecting the operational states of a television receiver, said circuit comprising:

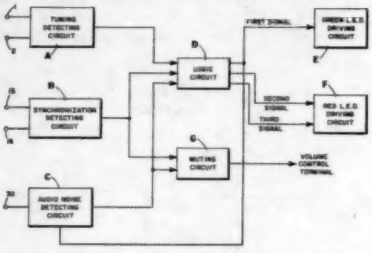
tuning detecting circuit means, responsive to a detected signal from an automatic fine tuning circuit, for detecting whether a tuner is operating in a proper tuning region, a slight mistuning region, or a mistuning region, and generating a tuner detecting output signal indicative of the region of tuner operation;

synchronization detecting circuit means, responsive to a

synchronizing signal and a flyback pulse, for detecting whether the synchronization is maintained, and generating a synchronization detecting output signal indicative of the maintenance of synchronization;

audio noise detecting circuit means, responsive to an audio intermediate frequency signal, for detecting whether said audio signal includes a noise component and generating a noise detecting output signal indicative of the presence of said noise component;

and logic circuit means, responsive to said tuner detecting output signal, said synchronization detecting output signal



and said noise detecting output signal, for generating a first output signal when said tuner is operating in said proper tuning region, a second output signal when said tuner is operating in said slight mistuning region, and, a third output signal when said tuner is operating in said mistuning region, wherein said first, second and third output signals represent said operational states, said logic circuit means further includes means for preventing the generation of said first and second output signals and for generating said third output signal whenever said synchronization is not maintained.

4,398,221

FACSIMILE APPARATUS

Shingo Yamaguchi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 25, 1981, Ser. No. 296,034

Claims priority, application Japan, Sep. 1, 1980, 55-119819; Sep. 1, 1980, 55-119820

Int. Cl.³ H04H *1/40*

U.S. Cl. 358—280 **14 Claims**

1. A facsimile apparatus having a random access memory and a microprocessor for encoding data from the random access memory, comprising:

scanner means for producing a serial image or video data output;

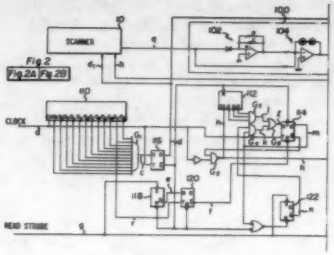
binary circuit means for producing a serial binary video data output from the serial video data output of the scanner means;

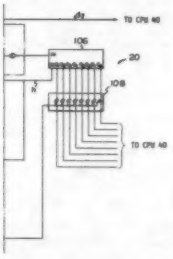
serial to parallel converter means for converting the serial binary video data output to a parallel binary video data output, the microprocessor being constructed to produce a read strobe when the parallel binary video data output can be inputted to the random access memory after encoding the previous data from the random access memory;

sync signal generator means for producing a sync signal at a predetermined interval, the microprocessor being constructed to produce the read strobe in response to the sync signal;

shift clock pulse generator means for producing shift clock pulses in response to the read strobe from the microprocessor, the scanner being constructed to feed the serial video data output to the binary circuit means in response to the shift clock pulses; and

control means for controlling the shift clock pulse generator to forcibly produce the shift clock pulses which are fed to





the scanner means whether or not the parallel binary data output can be inputted to the random access memory.

4,398,222

FACSIMILE APPARATUS

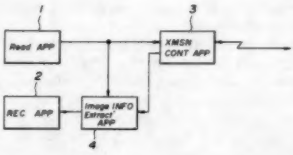
Mutsuo Ogawa, Yamato, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,906

Claims priority, application Japan, Nov. 8, 1979, 54-143826; Nov. 8, 1979, 54-143827

Int. Cl.³ H04N *1/04*

U.S. Cl. 358—287 **8 Claims**



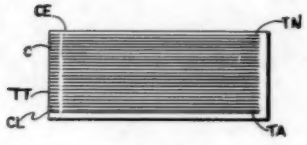
1. In a facsimile apparatus comprising an information read apparatus, a record apparatus and a transmission control apparatus, capable of transmitting and receiving image information, the improvement comprising an image-information extraction apparatus for extracting image information output from said image information read apparatus, at predetermined intervals, including means for coupling the extracted image information output to said image information record apparatus, thereby obtaining reduced monitor copies of the image information on record sheets while concurrently transmitting said image information to its counterpart facsimile apparatus serving as a receiving facsimile apparatus.

4,398,223

SYSTEM FOR RECORDING VIDEO INFORMATION ON A RECORD CARD

Jerome H. Lemelson, 85 Rectro St., Metuchen, N.J. 08840

Continuation of Ser. No. 951,763, Oct. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 654,939, Feb. 3, 1976, Pat. No. 4,121,249, which is a continuation-in-part of Ser. No. 474,392, May 30, 1974, abandoned, which is a continuation-in-part of Ser. No. 277,401, Aug. 2, 1972, Pat. No. 3,818,500, and Ser. No. 277,402, Aug. 2, 1972, abandoned. This application Apr. 24, 1981, Ser. No. 257,376
Int. Cl.³ H04N 5/76
U.S. Cl. 358—335 7 Claims



1. A system for recording video information on a record card comprising:

first means operable to generate video picture signals, each of which video picture signals defines at least one full frame of video information,

first control means for controlling said first means to generate frame video picture signals, and

second means including radiation beam generating means operable for generating a narrow beam of recording radiation of sufficient intensity to vary the topography of recording material intersected by said beam and means for receiving a frame video picture signal from said first means and modulating said narrow beam in accordance with said video picture signal received to permit the beam to selectively vary the topography of the recording material of a record member,

third means in operative location with respect to said second means for prepositioning a record card containing a plurality of parallel narrow record tracks with respect to said second means so as to permit said second means to record video signal information along selected record tracks of said card,

fourth means for effecting lateral relative positioning of a record card and said second means to dispose the scanning axis of said narrow beam of recording radiation in alignment with a selected narrow record track of said card,

fifth means for effecting relative movement between said card and said narrow beam of recording radiation so as to cause said narrow beam to scan said selected track, and

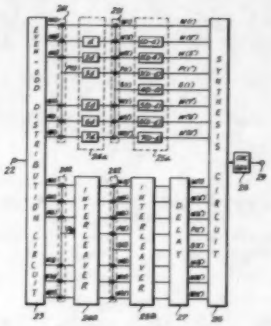
sixth means for activating said first control means to cause said first means to generate an output signal representative of the information contained in the field scanned when said fourth means is operated to effect the relative positioning of said scanning axis of said narrow beam of recording radiation with respect to a selected card track wherein the signal generated is employed to modulate said recording beam as it scans said selected track and said recording beam records the information defined by said signal along an area of the selected track of the card scanned by said beam.

4,398,224

TIME BASE CORRECTING APPARATUS

Nobuhiko Watanabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 1, 1981, Ser. No. 298,522
Claims priority, application Japan, Sep. 5, 1980, 55-123347
Int. Cl.³ H04N 5/95
U.S. Cl. 358—339 19 Claims



1. Time base correcting apparatus for correcting time base errors in a digital signal supplied thereto in the form of successive data blocks, each data block including at least plural data words and an error detecting word, said apparatus comprising memory means having plural addressable storage locations, each storing a respective data block; write address generating means for generating write-in addresses to identify the particular storage locations into which the supplied data blocks are written; error detecting means responsive to said error detecting word for detecting an error in a supplied data block; write-in means for writing successive data blocks into those storage locations identified by said write address generating means in the absence of an error detected by said error detecting means and for inhibiting the writing of a data block into an identified storage location when an error in said data block is detected; error store means for storing an error signal indicative of whether a supplied data block contains a detected error and has not been written into a respective storage location or does not contain a detected error and has been written into said respective storage location; read address generating means for generating read-out addresses to identify particular storage locations from which a stored data block is read; and read-out means for reading out the contents of a storage location identified by said read address generating means and for setting the error signal in said error store means to indicate that the contents of the storage location then read out by said read-out means contain a detected error notwithstanding the actual condition of said error signal.

4,398,225

COMBINED SERIALIZER ENCODER AND DECODER FOR DATA STORAGE SYSTEM

David T. Cornaby, Roy, and Eric J. Halvorsen, East Layton, both of Utah, assignors to Iomega Corporation, Ogden, Utah

Filed Apr. 24, 1981, Ser. No. 257,485
Int. Cl.³ G11B 5/09
U.S. Cl. 360—39 9 Claims

1. Method of decoding data stored on magnetic media in the form of encoded sequences of flux transitions, comprising the steps of:

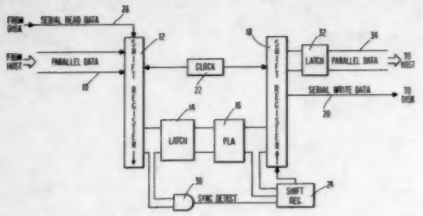
generating data bits corresponding to portions of said encoded sequence of flux transitions;

comparing said data bits generated according to the pattern of said flux transitions with stored data bit patterns; and

outputting decoded data patterns corresponding to said

stored pattern of data bit patterns as a result of said comparison step,

wherein a first integral number of said generated data bits is compared with stored patterns of data bits, and wherein if



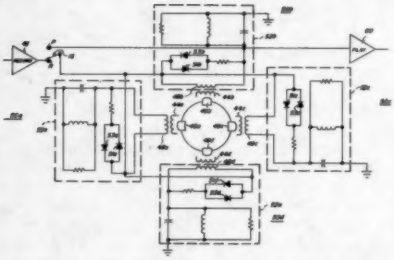
a given comparison step does not yield correspondence between stored data bit patterns and said generated data bit patterns, an additional integral number of data bits is generated and added to said previously generated number, and said comparison step is reperformed.

4,398,226

QUADRUPLEX RECORDINGS WITH FERRITE HEADS RESEMBLING QUADRUPLEX RECORDINGS WITH METAL HEADS

Roy H. Seim, San Diego, and John F. Bagby, Encinitas, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,301
Int. Cl.³ G11B *15/45, 15/02*
U.S. Cl. 360—65 **3 Claims**



1. A quadruplex head wheel assembly for recording and playing back video signals comprising

(a) a rotary head wheel,

(b) ferrite magnetic heads supported by said head wheel and having respective coils inductively coupled thereto, and

(c) compensation circuit means mounted directly upon said head wheel assembly and including (1) means for modifying record signals applied to said coils so that said signals, when recorded in a magnetic medium, are of a form similar to signals recorded by means of metal heads and (2) means for effectively disabling said compensation circuit means while playback signals are applied to said coils,

whereby said quadruplex head wheel assembly may be employed to produce tape recordings playable by means of a quadruplex recorder employing metal heads without significantly having to adjust the performance of said recorder,

said compensation circuit means being comprised of respective compensation circuits for each head supported by said head wheel, and

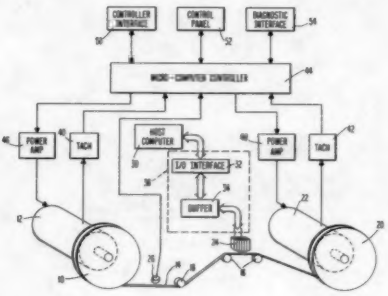
said respective compensation circuits being comprised of first and second parts, the first part being a frequency responsive circuit and the second part being a threshold circuit cooperative with said first part for effectively disabling said compensation circuit during the playback of recorded signals.

4,398,227

MAGNETIC TAPE DRIVE WITH ADAPTIVE SERVO

Robert Anderson, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 16, 1981, Ser. No. 244,064
Int. Cl.³ G11B *15/18*
U.S. Cl. 360—71 **3 Claims**



1. Method of recording digital data on magnetic tape supplied from a first reel, guided past a magnetic read/write head and wound upon a second reel, said data being received from a host computer in a predetermined format according to which said data is recorded in blocks of predetermined size having gaps of predetermined size interposed therebetween, comprising the steps of:

causing said tape to be passed from said first reel past said head onto said second reel at a substantially constant velocity during said reading or recording; and, in response to a signal that said reading or recording is to be stopped at a given point on said tape after recording of one of said blocks of data on said tape, performing a routine comprising the steps of:

decelerating said tape to a halt; and

rewinding a quantity of said tape onto said first reel from said second reel; and

halting said tape;

the length of said quantity of tape being such that in response to a signal from said host that said recording is to be resumed, said tape may be accelerated to said substantially constant velocity at a rate of acceleration such that said velocity is reached before said given point is juxtaposed to said read/write head, wherein the length of said quantity of tape rewound onto said first reel is substantially greater than the length of one of said gaps.

4,398,228

METHOD OF AVOIDING RESONANCE IN SERVO CONTROLLED APPARATUS

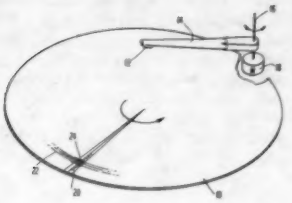
Randall C. Bauck, East Layton, Utah, assignor to Iomega Corporation, Ogden, Utah

Filed Apr. 28, 1981, Ser. No. 258,402
Int. Cl.³ G11B *21/10*
U.S. Cl. 360—77 **6 Claims**

1. In a magnetic disk drive of the type comprising a mechanical arm moving a read/write head with respect to a rotatable disk, the position of said head with respect to the disk being controlled in accordance with position information data recorded on said disk, read by said head and employed in a servo circuit comprising a sample and hold element;

the improvement which comprises the mechanical reso-

nance frequency of said movable arm being chosen to be substantially equal to the rate at which said position information is sampled and stored in said sample and hold element.

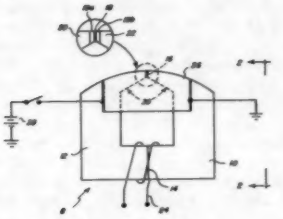


4,398,229

MAGNETIC HEAD WITH VERSATILE GAP

Richard J. McClure, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,845
Int. Cl.³ G11B *5/22, 5/25, 5/251*
U.S. Cl. 360—113 **10 Claims**



7. A magnetic head comprising

(a) first and second pole pieces disposed in facing relationship with a gap therebetween, at least one of said pole pieces being tapered toward said gap and having a given quiescent permeability,

(b) non-magnetic means within said gap,

(c) means bonding said pole pieces and said non-magnetic means into an integral assembly, and

(d) means coupled to said pole pieces for urging them relative to each other, thereby altering the internal stress of said pole pieces and causing the permeability of said tapered pole pieces to change significantly.

4,398,230

PROTECTION DEVICE FOR ELECTRICAL CONNECTORS

Georges Joannais, Boulogne, France, assignor to Souriau & Cie., Boulogne-Billancourt, France

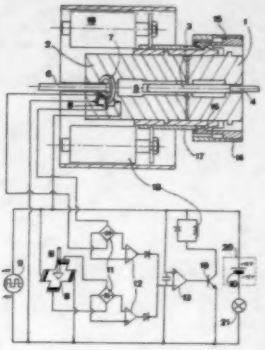
Filed Sep. 23, 1980, Ser. No. 190,065
Int. Cl.³ H02H *1/06*
U.S. Cl. 361—1 **16 Claims**

1. A protection device for automatically protecting an electrical connector against accidental disconnection, said electrical connector including two interfitting housings, locking means for locking said housings together and an electrically conductive member therein adapted for coupling to each other when said two housings are fitted and held together by their said locking means comprising:

detecting means disposed in one of said housings for detecting the absence of electrical energy in the electrically conductive member of said one of said housings and for transmitting a detector signal;

means for transmitting an order signal; and

responsive means comprising signal summing means having first input responsive to said detector signal and a second



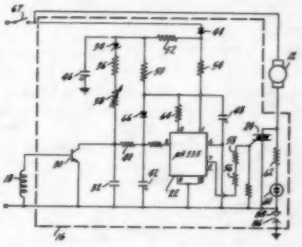
input responsive to said order signal whereby said responsive means allows unlocking of said locking means when said detector signal and said order signal are simultaneously present.

4,398,231

SOLID-STATE ELECTRONIC BRUSH SPEED SENSING CONTROL

Evan J. Currence, Rochester, Minn., assignor to Lake Center Industries, Winona, Minn.

Continuation of Ser. No. 135,005, Mar. 31, 1980, abandoned. This application Mar. 3, 1982, Ser. No. 354,199
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—23 **1 Claim**



1. For use in a vacuum cleaner having a suction head and means for drawing air and entrained material through the head with a brush rotatably mounted in the head for loosening material on a surface being cleaned to cause entrainment thereof in the drawn air and a drive including an electric motor for rotating the brush at a normal operative speed with a connection for connecting the motor to a source of AC electric power, the improvement comprising a control for disconnecting the motor from the electric power source, the control including means for sensing the rotational speed of the brush, means for disconnecting the motor from the electric power source when the brush is rotating at a predetermined tripout speed well below its normal operative speed, and means for automatically varying the predetermined tripout speed in direct relation to variations in the voltage from the source of electric power, the automatic varying means including means for converting the AC power from the electric power source to DC power so as to provide a DC power supply for the control, and a zener diode connected between the DC power

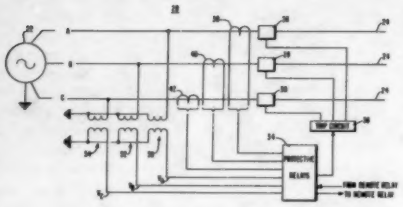
supply and the sensing means for the rotational speed of the brush.

4,398,232

PROTECTIVE RELAYING METHODS AND APPARATUS

Walter A. Elmore, Coral Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1981, Ser. No. 321,158
Int. Cl.³ H02H *3/16*
U.S. Cl. 361—47 **11 Claims**



1. Apparatus for detecting a single-phase-to-ground fault in a three-phase electrical power system, comprising:

means providing a first phasor signal responsive to unbalanced current in the three-phase system,

means providing a second phasor signal indicative of a negative sequence quantity, referenced to the phase being monitored,

means providing a third phasor signal responsive to the quadrature voltage of the phase being monitored,

comparison means comparing the phase angles of said first, second and third phasor signals,

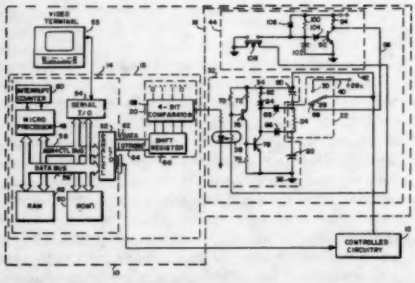
said comparison means providing a signal which indicates a single-phase-to-ground fault on the three-phase system, with the fault being on the phase being monitored, when the phase angles have a predetermined relationship.

4,398,233

FAIL-SAFE DEVICE FOR ELECTRONIC CONTROL CIRCUIT

John L. Bala, Scituate, and Charles R. Boswell, Boston, both of Mass., assignors to Electronics Corporation of America, Cambridge, Mass.

Filed Mar. 3, 1982, Ser. No. 354,352
Int. Cl.³ H02H *3/00*
U.S. Cl. 361—78 **52 Claims**



1. A fail-safe device for removing power from circuitry to be controlled upon occurrence of an undesired operating condition, said device comprising:

means for generating a fail-safe signal which normally varies between signal levels at a frequency in a predetermined range between a minimum and a maximum frequency unless there is an undesired operating condition, said means for generating including a programmable computing means for controlling said circuitry to be controlled, said computing means having memory means containing bit-transmit instructions for causing said computing means to generate a sequence of binary bits in which a predetermined pattern of bits appears at a frequency within a range corresponding to said predetermined range unless there is an undesired operating condition; and comparator means for receiving said sequence of binary bits, for repeatedly comparing said sequence with a predetermined pattern, and for generating an output which varies in signal level in response to a match between said sequence and said predetermined pattern; and

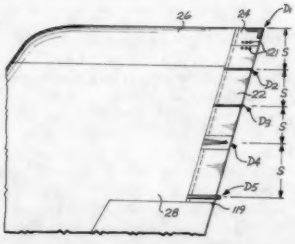
power control means responsive to the output of said comparator means for supplying power to said circuitry to be controlled only when said output of said comparator means has a frequency in said predetermined range, said power control means including an electromechanical relay for supplying power to said circuitry to be controlled, said relay having an electromagnet and normally-open mechanical relay contacts through which power is supplied to said circuitry, which normally-open contacts remain open unless a sufficient current is supplied to said electromagnet to keep them closed; relay actuating means, having power terminals and having low-pass means for transmitting only signal level variations in the output of said comparator means which occur below said maximum frequency, for supplying sufficient current to said electromagnet to keep said normally-open contacts closed when both power is supplied to said power terminals and said signal level variations have a frequency in said predetermined range; and latch-out means for preventing a sufficient current from being supplied to said electromagnet to close said normally-open contacts once said contacts have been opened, said latch-out means having means for supplying power to said relay actuating means through said normally-open contacts, so that once said contacts are opened said relay actuating means does not receive power and said relay enters latch-out, and reset means for selectively supplying sufficient current to said electromagnet to close said normally-open contacts and terminate said latch-out.

4,398,234

FLUSH PRECIPITATION STATIC DISCHARGER SYSTEM FOR AIRCRAFT

Rowan O. Brick, Bellevue, and Charles H. King, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1981, Ser. No. 305,818
Int. Cl.³ E05F *3/00*
U.S. Cl. 361—218 **5 Claims**



1. A flush mounted static discharger system for use in a tip area of an aircraft structure comprising in combination:

a composite material having a conductive fiber element portion exposed in the region of said tip area; and,

an array of lightning strike diverter tape segments disposed

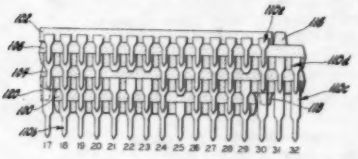
on said aircraft structure adjacent said tip area for protecting said tip area from lightning strikes.

4,398,235

VERTICAL INTEGRATED CIRCUIT PACKAGE INTEGRATION

Phillip A. Lutz; Phillip R. Motz, and Eugene H. Sayers, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 11, 1980, Ser. No. 186,316
Int. Cl.³ H05K 7/02
U.S. Cl. 361—393 **4 Claims**



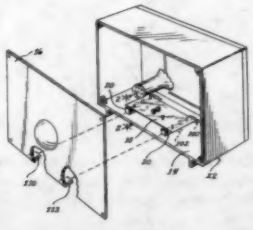
1. At least two integrated circuit packages of similar type, which type has at least one row of terminal leads, assembled to permit the terminal lead row of each package to share contacts in a row of terminal lead contacts even though similar electrical functions are associated with differently located terminal leads in the package rows, the assembly comprising the aforementioned integrated circuit packages, two interconnecting packages of similar type nested together with and between the integrated circuit packages so as to form middle packages in a nest of such packages, the middle two packages each having at least one more terminal lead in their rows than the integrated circuit packages, all active terminal leads of one integrated circuit package contacting a terminal lead on its adjacent middle package, less than all leads on the latter package contacting selected leads on its adjacent middle package, less than all the leads on the last-mentioned package contacting all active leads on the other integrated circuit package, means in each middle package providing an electrical shunt between one of its lead contacting a lead on an integrated circuit package and another of its leads contacting a lead on the other middle package, whereby terminal lead location on the one integrated circuit package is rerouted to a different location on the other integrated circuit package, and electrical connection to the other integrated circuit package, leads also appropriately electrically connects the differently located leads on the one integrated circuit package.

4,398,236

PC BOARD MOUNTING APPARATUS

Carl Campisi, Chicago, and Harry F. Sron, Schaumberg, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 2, 1981, Ser. No. 239,291
Int. Cl.³ H05K 7/12
U.S. Cl. 361—419 **5 Claims**



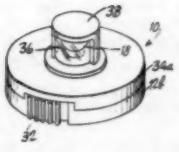
1. Apparatus for facilitating the handling of a printed circuit board and for mounting the printed circuit board on a platform, said printed circuit board comprising a first surface carrying a plurality of electric components and a second opposed surface forming a plurality of conductive paths to which the leads of said components are electrically connected by a plurality of solder fillets, said apparatus comprising an elongate rail member having a substantially flat base adapted for mounting on said platform, a pair of opposed longitudinally disposed side walls extending upwardly from said base, a series of longitudinally disposed rib and boss means extending upwardly from said base and intermediate said side walls, the upwardly facing surfaces of said side walls and rib and boss means forming a longitudinal supporting surface for abbutingly receiving the second surface of the printed circuit board along an edge thereof such that said base is maintained in spaced relation below said supporting surface at a distance greater than the extent to which said solder fillets depend from said printed circuit board second surface, said apparatus further comprising a first snap action tab transversely disposed intermediate said side walls and extending upwardly from said base near one distal end thereof and a second snap action tab longitudinally disposed intermediate said side walls and extending upwardly from said base near the longitudinal center thereof, said first and second snap action tabs being adapted for longitudinal and transverse deflection respectively for engaging the first surface of the printed circuit board along respective adjacent edges thereof so as to snap lock the second surface of said printed circuit board in abutment with said printed circuit board supporting surface.

4,398,237

MINIATURE BATTERY-OPERATED LIGHT

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Jan. 21, 1982, Ser. No. 341,203
Int. Cl.³ F21L 7/00
U.S. Cl. 362—186 **5 Claims**



1. A light comprising:

a shallow, open-top, can-shaped housing having a bottom wall, a circumferential sidewall, a centrally located, open-top bulb socket having a generally smooth interior except for a single, boss-shaped, radially inwardly extending projection serving the function of a thread for a threaded bulb having a bottom contact and a side contact, a pair of open-top battery channels flanking the socket, a retainer for a back contact, a retainer for an underlying contact and a retainer for a guide for a moving contact, wherein the entire housing, together with its bulb socket, battery channels and retainers, is made of a thermoplastic material integrally molded into a single piece;

a back contact retained in the housing retainer therefor adjacent a back end of said channels to make electrical contact with the rearwardly facing ends of batteries inserted in the channels, an underlying contact retained in the housing retainer therefor and having a battery end disposed at the front end of one of said channels to make electrical contact with the forwardly facing end of a battery inserted therein and a bulb end disposed at the bottom of said socket to make electrical contact with the bottom contact of a bulb inserted therein, and a guide for a moving contact retained in the housing retainer therefor

and a moving contact guided by said guide and having a battery end disposed adjacent the front end of the other one of said battery channels to make electrical contact with the forwardly facing end of a battery inserted therein and a bulb end facing but biased away from the side contact of a bulb inserted in said bulb socket;

a manual switch mounted on said housing for movement between an ON position in which it deforms said moving contact against the bias thereof to force its bulb end into electrical contact with the side contact of a bulb inserted in said socket and to thereby complete an electrical circuit comprising said batteries, back, underlying and moving contacts and said bulb to thereby energize the bulb, and an OFF position in which it allows the bias of said moving contact to break electrical contact with the side contact of a bulb inserted in said socket and thereby de-energize the bulb; and

a lid closing the open-top housing to thereby enclose said contacts, batteries inserted in said channels and bulb inserted in said socket but to allow manual access to said switch, said lid having a transparent bulb cap allowing illumination of the ambient by said bulb;

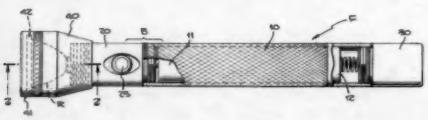
all of said light, except for the contacts and for the batteries and bulb inserted therein, being made of molded thermoplastic material components manually fitted together by snap- and/or friction-fit to form the assembled light.

4,398,238

VARIABLE FOCUS FLASHLIGHT

Norman C. Nelson, Newberry Springs, Calif., assignor to Kel-Lite Industries, Inc., Barstow, Calif.

Filed Dec. 4, 1981, Ser. No. 303,418
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—187 **7 Claims**



1. In a variable focus flashlight having a flashlight body, a bulb supported in fixed relation to the body, a flashlight head, a reflector supported in fixed relation to the head, and interengaging threads supporting the head from the body so that the head may be rotated for adjusting the focus of the flashlight beam, the improvement comprising:

an expansible spring disposed partly within the body and partly within the head;

the body and the head each having separate seat means receiving the corresponding end of said spring, at least one of said seat means permitting relatively free lateral movement of the associated spring end so that the head may be rotated as desired for adjusting the beam focus; and

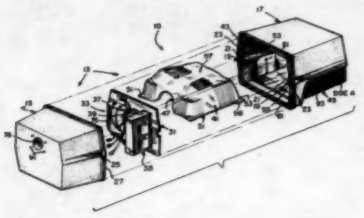
the interengaging threads of the body and head having relatively high friction surfaces, whereby the expansive force of said spring creates a substantial frictional force between said threads so as to retain the desired rotational position of the head.

4,398,239

LUMINAIRE ADAPTED FOR HORIZONTAL AND VERTICAL OPERATION

Hendrik A. J. de Vos, Swansea, Mass., and Ronald L. Sitzema, Jr., Ellsworth, Mich., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 4, 1981, Ser. No. 240,343
Int. Cl.³ F21S *1/10, 3/10*
U.S. Cl. 362—263 **15 Claims**



1. A luminaire comprising:

a boxlike, two-part housing;

an elongated light source positioned within said housing;

a reflector positioned within one of said parts of said housing and adapted for having said elongated light source oriented substantially therein, said reflector including a plurality of reflecting surfaces of different configurations; and

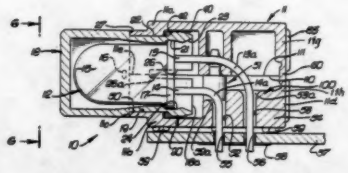
a multiplanar, prismatic lens located adjacent said reflector for having both the direct light from said light source and the light reflected by said reflector pass therethrough, each of said reflecting surfaces of said reflector reflecting light from said elongated light source onto predetermined portions of said prismatic lens such that said luminaire will produce a first light distribution below said luminaire when said luminaire is positioned in a substantially horizontal orientation and a second light distribution different from said first light distribution below said luminaire when said luminaire is positioned in a substantially vertical orientation, said luminaire operable in both of said orientations.

4,398,240

LENS CAP HOLDER FOR ATTACHMENT TO CIRCUIT BOARDS

John M. Savage, Jr., 8118 W. 83rd St., Apt. C, Playa del Rey, Calif. 90291

Continuation-in-part of Ser. No. 907,735, May 19, 1978, Pat. No. 4,195,330, which is a continuation-in-part of Ser. No. 787,016, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 638,626, Dec. 8, 1975, abandoned. This application Jul. 16, 1979, Ser. No. 57,890
Int. Cl.³ F21V *3/00*
U.S. Cl. 362—311 **20 Claims**



1. For combination with an LED and a lens cap therefor, the lens cap having a skirt portion supporting the LED, there being wire leads extending from the LED, the combination comprising

(a) a holder having first and second sections,

(b) said sections having shoulders to engage and support the

lens cap when the sections are assembled to the skirt portion of the cap,

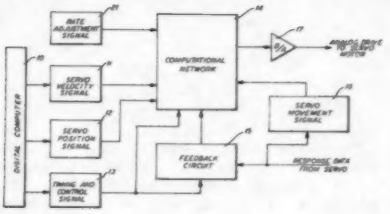
(c) the holder having recesses to pass said wire leads from the interior to the exterior of the holder when the sections are assembled to the skirt portion of the cap.

4,398,241

DIGITAL CONTROL CIRCUIT FOR AN ANALOG SERVO

Elwood B. Baker, Endwell, and James A. Turner, Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Aug. 7, 1980, Ser. No. 176,214
Int. Cl.³ G05B *17/02*; G06F *15/46*
U.S. Cl. 364—167 **6 Claims**



1. In a simulator training apparatus having a plurality of operations controlled in response to information from a digital computer and at least some of said operations having moveable parts connected for movement by an analog drive servo motor, a digital control circuit to actuate said analog servo motor in response to said digital information, comprising:

control means responsive to a clocked timing signal from said digital computer for timing and control of the other component circuits of said digital control circuit,

means to receive digital information from said computer to provide a digital signal indicative of a new servo position,

separate means to receive digital information from said computer to provide a digital signal indicative of a velocity of movement,

feedback circuit means including means to receive information from said servo indicative of actual present servo position,

computational circuit means to generate a digital output signal responsive to digital information from each of said means to receive, from said control means, and from said feedback circuit means, so that said digital output signal is sufficient to cause said servo to move from its actual present position to said new servo position in a predetermined manner, and

digital-to-analog converter circuit means to convert said digital output signal from said computational circuit means into analog form to actuate said analog servo motor in said predetermined manner.

4,398,242

ELECTRONIC CONTROLLER

Henning Buus, Woodinville, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 25, 1980, Ser. No. 124,366
Int. Cl.³ G05B *9/03*; G05D *1/00*
U.S. Cl. 364—183 **11 Claims**

1. An electronic controller for producing a controlled output in response to a pair of input signals comprising:

means for processing said input signals;

a pair of summer means, each summer having a plurality of inputs and an output and producing an output signal equal to the summation of the signals coupled to its inputs;

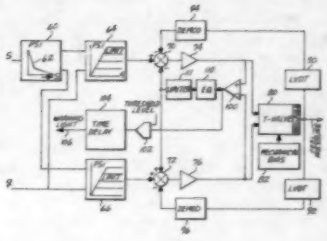
means for coupling each of said processed input signals to an input of one of said summers;

a pair of servo amplifier means;

means for coupling each summer means output to one of the servo amplifier inputs;

utilization means including an actuator, said actuator responding to each output from said pair of servo amplifier means;

feedback means for sensing the status of said utilization means and producing negative feedback signals to an input of each summer means such that for ideal operation of the electronic controller the output signals from said pair of servo amplifiers are identical;



comparator means for comparing the two servo amplifier output signals and producing a difference signal related to the difference therebetween;

threshold warning means for producing a warning indication in response to said difference signal exceeding a predetermined reference threshold; and

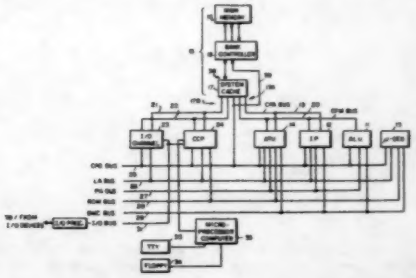
equalizer circuitry means for processing said difference signal and applying a negative feedback correction signal to an input of each summer means thereby reducing offsets between the servo amplifier outputs due to system tolerance.

4,398,243

DATA PROCESSING SYSTEM HAVING A UNIQUE INSTRUCTION PROCESSOR SYSTEM

Kenneth D. Holberger, N. Grafton; James E. Veres, Framingham; Michael L. Ziegler, Whitinsville, all of Mass., and Carl Henry, Houston, Tex., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 25, 1980, Ser. No. 143,651
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **17 Claims**



1. In a data processing system, an instruction processor means for decoding a plurality of first instructions forming a first designated basic instruction set the addresses of which have a first selected number of bits and a plurality of second instructions forming a second designated extended instruction set the addresses of which have a second selected number of bits different from said first selected number, each of said first or second instructions including at least an operating code

portion which includes a selected bit code combination which identifies whether said instruction is from said basic instruction set or from said extended instruction set and some of said first and second instructions further including at least one displacement portion, said instruction processor means comprising

instruction decode register means having at least two register regions, a first of said regions designated to temporarily store said operating code portion of an instruction and said at least one other region designated to temporarily store a displacement portion;

means for supplying an incoming instruction of said basic instruction set or said extended instruction set;

instruction decode shifter means connected to said instruction supplying means and responsive to said incoming instruction for entering said incoming instruction into said instruction decode register means so that said first designated region temporarily stores the operating code portion thereof and said at least one other designated region, if required, temporarily stores a displacement portion thereof;

means responsive to the selected bit code combination of each incoming instruction for identifying whether said instruction is from basic instruction set or from said extended instruction set; and

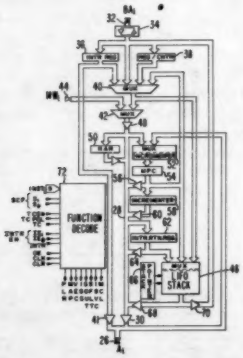
means for decoding the operating code portion of said identified instruction supplied thereto from said instruction decode register means to produce a plurality of operating code descriptors associated with said decoded instruction and for producing a starting address of one or more microinstructions associated with said decoded instruction.

4,398,244

INTERRUPTIBLE MICROPROGRAM SEQUENCING UNIT AND MICROPROGRAMMED APPARATUS UTILIZING SAME

Paul Chu, Sunnyvale, and James B. Klingensmith, San Jose, assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed May 7, 1980, Ser. No. 147,100
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **36 Claims**



1. An interruptible microprogram sequencing unit for providing a sequence of microinstruction addresses to a control memory which contains a plurality of microinstructions for the operation of a microprogrammed apparatus, the microprogram sequencing unit comprising:

(a) an address output for providing microinstruction addresses to the control memory,

(b) an address bus connected to said address output such that a plurality of microinstruction addresses applied to said address bus are sequentially provided to said address output,

(c) means connected to said address bus for applying said plurality of microinstruction addresses to said address bus,

(d) an interrupt return register operably connected to said address bus for receiving a microtruction address from said address bus and storing said received microinstruction address, and

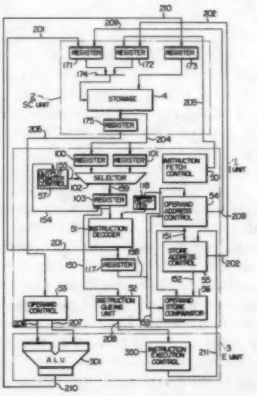
(e) means connected to said address bus for interrupting said sequence of microinstruction addresses and effecting storage of a microinstruction address on said address bus in said interrupt return register.

4,398,245

DATA PROCESSING SYSTEM HAVING AN INSTRUCTION PIPELINE FOR PROCESSING A TRANSFER INSTRUCTION

Akira Fujita, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1980, Ser. No. 172,181
Claims priority, application Japan, Jul. 27, 1979, 54-95927
Int. Cl.³ G06F *9/38*
U.S. Cl. 364—200 **13 Claims**



1. In a data processing system capable of pipeline operation for parallelly executing instructions each consisting of a plurality of process steps including an operand address calculation step, said pipeline operation including the execution of a transfer instruction having a first operand field, a second operand field and a field (L) specifying the number of bytes to be transferred, wherein the transfer is carried out in a plurality of transfer operations, sequentially, such that a predetermined number of bytes are transferred at each transfer operation including first calculation means for calculating a second operand address in said operand address calculation step based on said second operand field; the improvement comprising:

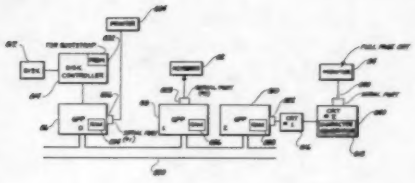
second calculation means operating independently of the operation of said first calculation means for calculating a first operand address based only on the first operand field in a process step other than said operand address calculation step.

4,398,246

WORD PROCESSING SYSTEM EMPLOYING A PLURALITY OF GENERAL PURPOSE PROCESSOR CIRCUITS

John K. Frediani, Santa Cruz; Richard E. Johnson, Los Altos, and Terrance L. Lillie, Palo Alto, all of Calif., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 12, 1980, Ser. No. 177,531
Int. Cl.³ G06F *3/12, 3/14, 3/04*
U.S. Cl. 364—200 **13 Claims**



1. A data processing system, comprising:

(a) a plurality of data processing stations each having a first communications means for connecting each of said stations to a common communications channel and having a second communications means for communicating with one or more associated controlled units, each of said data processing stations further comprising a processor and a memory, said first communications mean, said second communications means and said processor each operatively connected to said memory, so that each may access said memory, and to contention resolving means, said resolving means being operatively connected to said memory and to each other device operatively connected to said memory, for resolving conflict between said other devices for access to said memory;

(b) said common communications channel operatively connected to said first communications means of each of said plurality of data processing stations, whereby each of said processors may access said memory of any of said processing stations;

(c) a first one of said controlled units further comprising mass storage means for entering data for storage and for retrieving stored data and including a controlled unit communications means for data communications, said first controlled unit communications means coupled to said second communications means of a first one of said plurality of data processing stations, whereby said first controlled unit may communicate with said first station;

(d) a second one of said controlled units further comprising a keyboard for entering data into said system and a first display means for displaying a single line of data and including a controlled unit communications means for data communications, said second controlled unit communications means coupled to said second communications means of a second one of said plurality of data processing stations whereby said second controlled unit may communicate with said second station; and

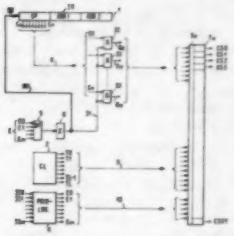
(e) a third one of said controlled units further comprising second display means for displaying multiple lines of data and including controlled unit communications means for data communications, said third unit communications means coupled to second communication means of a third one of said plurality of data processing stations, whereby said third controlled unit may communicate with said third station.

4,398,247

CONTROL DEVICE FOR DIRECTING EXECUTION OF FORCED OPERATIONS IN A DATA PROCESSING SYSTEM

Dieter Bazlen, Stuttgart; Dietrich W. Bock, Schoenaich; Klaus J. Getzlaff, Boeblingen; Johann Hajdu, Boeblingen, and Helmut Painke, Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,876
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937777
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—200 **6 Claims**



1. In a data processing system having system control means for executing forced instructions in response to the presence of a particular condition requiring such execution, said system control means including means for generating inhibit signals indicative of the need to execute a forced instruction, apparatus for optimizing execution of forced conditions, said apparatus comprising:

(a) an instruction register for holding the bits, including the operation code, of the current instruction;

(b) an operation decoder for generating control signals in response to the receipt of signals defining a desired control action;

(c) first circuit means, operatively coupled between the operation code portion of said instruction register and said operation decoder, for converting the operation code bits of the current instruction to a predetermined code combination, in response to receipt of a code conversion initiating signal, which code combination triggers a NOP control signal reaction by said operation decoder; and

(d) second circuit means, operatively coupled to receive said inhibit signals from said system control means and to an input of said first circuit means, for generating a code conversion initiating signal to apply to said first circuit means in response to said receipt of inhibit signals.

4,398,248

ADAPTIVE WSI/MNOS SOLID STATE MEMORY SYSTEM

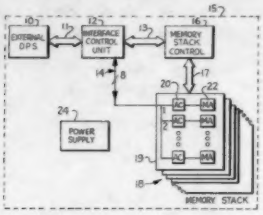
Yukun Hsia, and Richard W. Rodgers, both of Santa Ana, Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Oct. 20, 1980, Ser. No. 198,472
Int. Cl.³ G11C *11/40*; G06F *13/00*
U.S. Cl. 364—200 **13 Claims**

1. A nonvolatile solid state mass memory system comprising:

a plurality of adaptive, wafer scale integration memory wafers wherein an individual memory wafer comprises a plurality of rows with each row containing a first plurality of memory arrays each having a plurality of locations for nonvolatile storage of information and a second plurality of array controllers wherein the memory arrays in the row are operably connected to and uniquely accessed by the array controllers in the row by a first bi-directional bus means and the array controllers are operably connected to

a second bi-directional bus means such that only one array controller is operable at one time within a row with the remainder of the functional array controllers serving as inactivated functional redundant spares; and



a memory system control means comprising means to identify and access an individual memory wafer, means to identify and access individual array controllers via the second bi-directional bus, and interface means to operably connect the nonvolatile solid state mass memory system to an external information processing system.

4,398,249

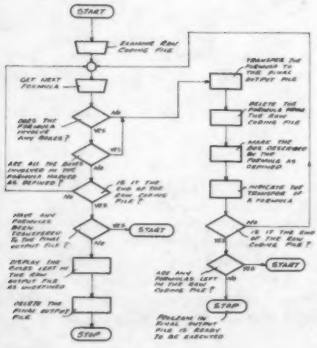
PROCESS AND APPARATUS FOR CONVERTING A SOURCE PROGRAM INTO AN OBJECT PROGRAM

Rene K. Pardo, and Remy Landau, both of 12 Romney Rd., Downsview, Ontario, both of Canada M3H 1H2

Filed Aug. 12, 1970, Ser. No. 63,185

Int. Cl.³ G06F *15/06*

U.S. Cl. 364—300 **36 Claims**



1. A process of operating a general purpose data processor of known type to enable the data processor to execute formulas in an object program comprising a plurality of formulas, such that the same results will be produced when using the same given data, regardless of the sequence in which said formulas are presented in said object program, comprising the steps of:

(a) examining each of said formulas in a storage area of the data processor to determine which formulas can be designated as defined;

(b) storing, in the sequence in which each formula is designated as defined, said formulas which are designated as defined;

(c) repeating steps (a) and (b) for at least undefined formulas as many times as required until all said formulas have been designated as defined and have been stored;

whereby to produce the same results upon sequential execution of the formulas stored by said process when using the same given data, regardless of the order in which said formulas were presented in the object program prior to said process.

4,398,250

ELECTRONIC CASH REGISTER MUTUAL TRANSMISSION SYSTEM FOR PLURALITY OF CASH REGISTERS

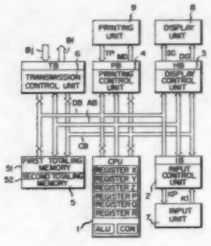
Taiichi Hosono, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,239

Claims priority, application Japan, Oct. 31, 1979, 54-140940; Oct. 31, 1979, 54-140941

Int. Cl.³ G06F *15/24*

U.S. Cl. 364—404 **4 Claims**



1. An electronic cash register mutual transmission system for a plurality of cash registers comprising:

input means for inputting amount data including associated classification data;

first memory means having a plurality of storage areas for storing total data of the input amount data for each classification;

a central processing unit coupled to said input means and to said first memory means for adding the input amount data to the total data in a specified storage area of said first memory means;

transmission means for transmitting, to at least one of a plurality of cash registers, amount data and classification data input from said input means when a storage area specified by the inputted classification data does not exist in said first memory means; and

connection means coupled to said transmission means for connecting together a plurality of cash registers by way of said transmission means.

4,398,251

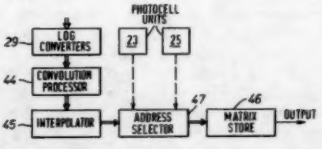
RADIOGRAPHY

Christopher A. G. LeMay, Osterley, England, assignor to EMI Limited, Hayes, United Kingdom

Continuation-in-part of Ser. No. 716,566, Aug. 23, 1976, Pat. No. 4,088,887, which is a continuation of Ser. No. 639,478, Dec. 10, 1975, Pat. No. 4,010,371. This application Aug. 8, 1977, Ser. No. 822,817

Int. Cl.³ A61B *6/00*

U.S. Cl. 364—414 **11 Claims**



1. A medical diagnostic X-ray machine for examining a patient and for building up and displaying a two-dimensional picture of the X-ray response coefficients of the elements into

which a slice of the patient, extending along a planar section through the patient, is divided by a finite Cartesian matrix superimposed on the slice, comprising:

means for deriving sets of output signals corresponding to sets of beam paths of finite lengths, each set of beam paths being made up of beam paths which substantially coincide with said section and have one of their ends at a common apex on one side of the patient and their other ends spaced from each other along the section at the opposite side of the patient to thereby form a fan-shaped distribution of beam paths, said apices being circumferentially spaced from each other along an orbit around the patient and at least the central beam paths of each of said sets of beam paths passing through the patient, each output signal being a measure of a response encountered by X-radiation in travelling along a corresponding one of said beam paths;

means for providing a sequence of convolution factors and means for producing, for each given one of said beam paths, a convolved output signal determined by accumulating: (1) the output signal corresponding to the given beam path weighted in accordance with a central factor of the sequence of convolution factors, and (ii) other output signals of the same set weighted in accordance with respective convolution factors the positions of which in the sequence correspond to the position of the respective output signals in the set;

means for providing a correction factor for each element of at least a substantial subset of the elements of said patient slice, said correction factors being measures of errors in producing said convolved output signals due to the fact that the beam paths of a set are in a fan-shaped distribution rather than being parallel to each other; and

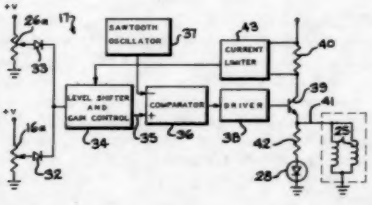
means for building up said picture by producing, for each element of the patient slice, an X-ray response coefficient based on the convolved output signals corresponding to the beam paths passing through the element, the respective positions of the last recited beam paths and slice element and the correction factor, if any, for the last recited slice element, and means for storing and for displaying said X-ray response coefficients to thereby display said picture of the patient slice examined by the machine.

4,398,252

ELECTRIC CONTROLLER HAVING OUTPUT POWER LIMITING CIRCUIT

John S. Frait, Ann Arbor, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.

Filed Apr. 20, 1981, Ser. No. 255,596
Int. Cl.³ B60T *13/68*
U.S. Cl. 364—426 **8 Claims**



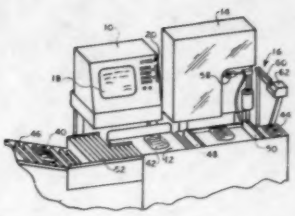
1. An electronic controller for generating a variable duty cycle direct current pulse signal comprising means for generating an analog signal indicative of a desired duty cycle, means responsive to such analog signal for generating a direct current pulsed output signal having such desired duty cycle, means for sensing the current load on such output signal, and means responsive to said sensed current load progressively exceeding a predetermined level for progressively reducing the power in each pulse of such output signal.

4,398,253

SCALE CONTROLLER

Edward C. Karp, Belvidere, Ill., and Randy J. Curran, Las Vegas, Nev., assignors to Sanitary Scale Company, Belvidere, Ill.

Filed May 4, 1981, Ser. No. 260,091
Int. Cl.³ G06K *15/02*
U.S. Cl. 364—466 **14 Claims**



1. In a weighing and label printing system having a scale, a label printer, and a controller for responding to the weight of a commodity on the scale, for computing the price of the commodity, and for causing the label printer to print the commodity's price, weight and other commodity characteristics, an improved controller comprising:

memory means for storing at least a list of commodities to be priced, an alpha description of each commodity, and a price per pound of each commodity;

a keyboard having a plurality of keys thereon;

a cathode ray tube; and

circuit means coupled to the scale, the label printer, the memory, the cathode ray tube and the keyboard, the circuit means being responsive to operator actuation of a selected keyboard key for causing the cathode ray tube to display the list of commodities from memory, responsive to operator actuation of a keyboard key for causing the cathode ray tube to extinguish the displayed commodity list and to display the alpha description and the price per pound of a commodity selected from the list, for computing and displaying the computed price of the commodity, and for activating the label printer to print a label bearing at least the displayed alpha description, price per pound, and computed price.

4,398,254

METHOD FOR CONTROLLING STRIP THICKNESS IN STRIP MILL

Katsuya Kondo, Amagasaki, and Shigeru Tajima, Osaka, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

PCT No. PCT/JP80/00265, § 371 Date Jun. 4, 1981, § 102(e) Date Jun. 4, 1981, PCT Pub. No. WO81/01257, PCT Pub. Date May 14, 1981
PCT Filed Oct. 25, 1980, Ser. No. 270,511
Claims priority, application Japan, Oct. 31, 1979, 54-141498
Int. Cl.³ G06F *15/46*; B21B *37/12*
U.S. Cl. 364—472 **1 Claim**

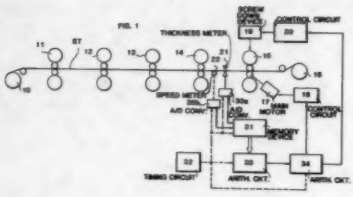
1. In a strip mill comprising a rolling mill for rolling a strip, a screw down position control device for adjusting the distance between the rolls of said rolling mill, a tension adjusting device for adjusting the tension applied to the strip, and a speed meter for detecting the speed of movement of the strip, a method for controlling thickness of the strip, comprising the steps of:

providing a thickness meter on the entrance side of the rolling mill for measuring deviations in the strip thickness from a predetermined thickness;

sampling an output of the thickness meter for each predetermined time period Δt which is in a range which is equal to or smaller than 1/5 of the period of the cut-off frequency

of at least one of the screw down position control device and the tension adjusting device;

storing, in a memory means having a plurality of storage locations, the deviations in the strip thickness measured by the thickness meter and existing at a plurality of positions located between the thickness meter and the rolling mill, the measured thickness deviations being stored in specific storage locations in the memory means on the basis of the speed of movement of the strip as measured by the speed meter;



computing a control signal for adjusting at least one of the screw down position control device and the tension adjusting device, using at least two of the stored thickness deviation values and the measured speed of the strip for each time period Δt; and

outputting the computed control signal to at least one of the screw position control device and the tension adjusting device.

4,398,255

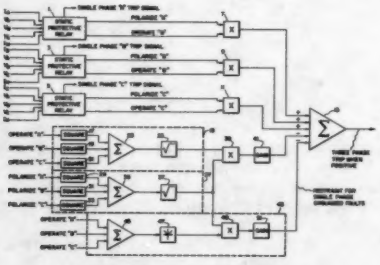
POLYPHASE ANGLE ESTIMATOR

William J. Premerlani, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,789

Int. Cl.³ H02H *3/16, 3/18*

U.S. Cl. 364—492 **4 Claims**



1. A power system relay for rapidly detecting multiphase faults in transmission lines comprising:

means having an input of the multiphase voltage and currents of said transmission line for generating a polarizing signal and an operating signal for each input phase;

a first summing means;

means for multiplying the polarizing signal relating to one phase by the operating signal relating to the same phase and coupling the result for each phase to a different positive input of said summing means;

means for generating a signal indicative of the average amplitude of all said polarizing signals;

means for generating a signal indicative of the average amplitude of all said operating signals; and

means for multiplying said average polarizing signals and said average operating signals together and adjusting the product by a predetermined gain, said gain determining the balance angle between phases, said adjusted product being coupled to a negative input of said summing means, said summing means output indicating an abnormal condition when it is above a predetermined value.

4,398,256

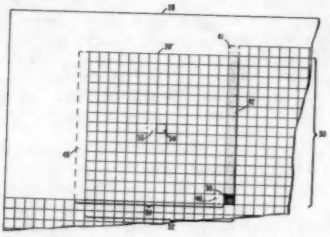
IMAGE PROCESSING ARCHITECTURE

Thomas A. Nussmeier, Thousand Oaks, and Scott D. Fouse, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 16, 1981, Ser. No. 244,397

Int. Cl.³ G06F *15/36*

U.S. Cl. 382—41 **11 Claims**



1. Apparatus, for processing sequentially applied signals which are representative of a matrix of pixels to provide output signals useful for determining predetermined statistical moments associated with a predetermined pixel of said matrix, said output signals being derived from computations performed on a submatrix of pixels centered around said predetermined pixel which sequentially steps through said matrix in a manner such that each pixel in said matrix has said output signals computed therefore during each scan of said matrix, said apparatus determining said output signals when a new sequentially applied signal is encountered and a corresponding predetermined pixel is encountered during each scan, said apparatus comprising:

(a) first means for storing first signals indicative of respective columnar sums of signals located in a predetermined set of rows of said matrix associated with said predetermined pixel;

(b) second means for storing second signals indicative of the sum of a predetermined subset of columnar sums of said predetermined set of rows of said matrix;

(c) third means for storing third signals indicative of a predetermined pixel associated with a first predetermined column of said predetermined subset of columnar sums;

(d) fourth means for providing said first signals which are indicative of the sum of a first predetermined one of said stored first signals and said third signals, minus a predetermined one of said stored third signals, said fourth means providing said first signals to said first means so as to update said predetermined columnar sums stored thereby; and

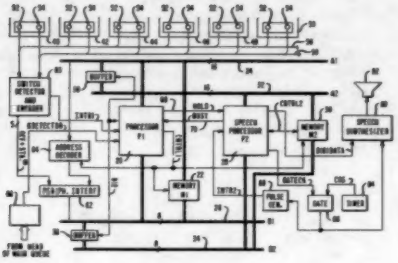
(e) fifth means for providing said second signals which are indicative of said sum of a predetermined subset of columnar sums and said first signals minus a second predetermined one of said stored first signals indicative of a second predetermined columnar sum of said predetermined subset of columnar sums, said fifth means providing said second signals to said second means so as to update said sum of a predetermined subset of columnar sums stored thereby, said second signals being provided as said output signals of said apparatus.

4,398,257

CUSTOMER QUEUE CONTROL METHOD AND SYSTEM

Bruno J. Paganini, Centerville, Ohio; Yodhin Anavil, Cerritos, Calif.; William J. Hale, and Kwang H. Lee, both of Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 27, 1981, Ser. No. 239,098
Int. Cl.³ G08B 7/00
U.S. Cl. 364—550 **17 Claims**



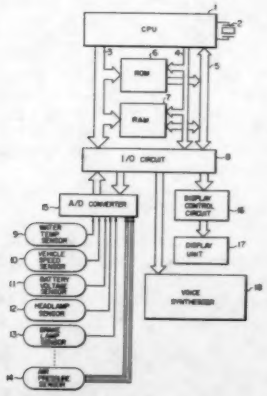
1. In a customer queue control system for an establishment having a plurality of stations and utilizing a main queue and a plurality of local queues, each of which local queues may contain more than one customer, the improvement comprising detection means for detecting conditions at each station, timing means for providing a timed period unique for each station, means responsive to said detection means and said timing means for determining which local queue will probably have the shortest wait, and means for generating a voice message to direct a customer at the head of the main queue to a selected local queue.

4,398,258

MALFUNCTION PROCEDURE INDICATING SYSTEM AND METHOD

Masataka Naitoh, Kariya; Susumu Urano, Oobu; Minoru Kuroda, Aichi; Yasuhumi Kojima, Gifu, and Kenji Tsukahara, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 22, 1980, Ser. No. 218,832
Claims priority, application Japan, Dec. 26, 1979, 54-169971
Int. Cl.³ A62C 27/18; G06F 15/46
U.S. Cl. 364—551 **7 Claims**



1. A malfunction procedure indicating system comprising:

sensing means for sensing a condition of each of a plurality of inspection items associated with an operation of a vehicle to generate a detection signal;

computing means responsive to the detection signals of said sensing means such that when the existence of a malfunction in at least one of said plurality of inspection items is determined, a first indication signal corresponding to said malfunction inspection item is generated, and said computing means monitors whether an operation as indicated by the first indication signal has been carried out, a second indication signal is generated upon detecting that the operation is carried out, and thereafter said computing means generates an indication discontinuing signal when it is determined from the signal of said sensing means that the malfunction does not exist;

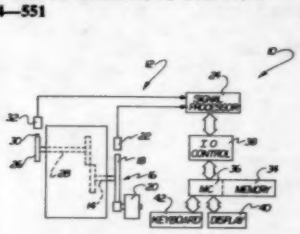
indicating means responsive to said first and second indication signals from said computing means to indicate a malfunction procedure from said computing means to indicate a malfunction procedure by verbal representation in response to each of said indication signals during the operation of said vehicle, said indicating means discontinuing indication in response to said indication discontinuing signal.

4,398,259

SNAP ACCELERATION METHOD OF DIAGNOSING FAULTS IN INTERNAL COMBUSTION ENGINES

David A. Levine, Westbury, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 1, 1980, Ser. No. 174,546
Int. Cl.³ G01M 15/00; G06F 15/46
U.S. Cl. 364—551 **9 Claims**



2. A method of diagnosing faults in individual cylinders in an internal combustion engine, comprising the steps of:

accelerating said engine,

measuring the time intervals required for the engine to rotate through successive, equal angular increments as said engine is being accelerated, each increment being a fraction of the rotation required for a single engine cylinder power contribution, thereby producing a sequence of time interval measurements the values of which generally undulate about an average value due to the power contributions of individual cylinders, and wherein the average value of said time interval measurements and the magnitude of the undulations about the average value generally decrease with time due to the acceleration of said engine,

modifying values corresponding to said values of said time interval measurements in said sequence so as to provide a modified sequence having a substantially constant average value and magnitude of undulation regardless of the acceleration of said engine, and

comparing characteristics of individual said undulations in said modified sequence so as to diagnose faults in individual cylinders in said engine,

wherein said step of modifying includes the steps of matching a first regular, monotonic function to selected peaks of said undulations, matching a second regular, monotonic function to selected valleys of said undulations, and utilizing said first and second matched functions to modify said time interval measurements.

8. Apparatus for diagnosing faults in individual cylinders in

an internal combustion engine as the engine is being accelerated, comprising:

means responsive to rotation of said engine for providing a plurality of successive signals each having a value indicating the time interval taken by the engine to rotate through a corresponding one of successive, equal angular increments as said engine is being accelerated, each angular increment being a fraction of the rotation required for a single engine cylinder power contribution, thereby producing a sequence of signals the values of which generally undulate about an average value due to the power contributions of individual cylinders and wherein the average value of said signals and the magnitude of the undulations about the average value generally decrease with time due to the acceleration of the engine;

means for modifying the values of said sequence of signals so as to provide a modified sequence having a substantially constant average value and magnitude of undulation regardless of the acceleration of the engine, and for comparing characteristics of individual said undulations in the modified sequence so as to diagnose faults in individual cylinders in the engine.

4,398,260

SKID CONTROL METHOD

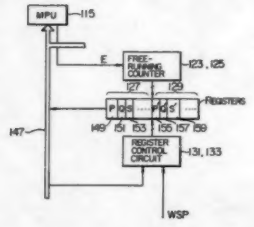
Junichi Takahashi, Katsuta; Takanori Shibata, Hitachi; Shotaro Naito, and Keiichi Tokuyama, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 8, 1980, Ser. No. 148,047

Claims priority, application Japan, May 18, 1979, 54-60468; Aug. 1, 1979, 54-97327

Int. Cl.³ G01P *3/48;* **B60T** *8/02*

U.S. Cl. 364—565 **11 Claims**



1. A method of determining wheel speed for a skid control device using a wheel speed sensor; a control circuit including therein a microcomputer, calculating the wheel speed on the basis of the pulse signal from said wheel speed sensor, and delivering a brake releasing signal when the wheels slip; and a brake oil control apparatus for controlling the pressure of oil used in the wheel braking means, wherein said microcomputer comprises a free-running counter for counting clock pulses and a memory having a sequence of storage locations for storing the content, or count values, of said free-running counter, and means for forming an interrupt request signal by the use of said pulse signal from said wheel speed sensor, wherein said method comprises:

a storing step including the steps of

storing in a pregiven one of said sequence of storage locations in said memory, the contents of said free-running counter at the time said respective interrupt request signal is generated, and

transferring the contents in said pregiven location and successively adjacent locations in said memory to the location adjacent to said pregiven location and successively adjacent locations thereto in said memory, respectively; and

a calculating step including

a first step of calculating the difference between the values stored in said head location and a predetermined lower location;

a second step of determining the number of wheel speed pulses to be used for calculating an average number of pulses which are produced during an interval between two successive wheel speed pulses in accordance with the magnitude of said difference obtained in said first step, and then selecting the location in said memory corresponding to this number of wheel speed pulses from which the stored value is derived;

a third step of calculating the difference between the values stored in said head location and said location selected in said second step and then determining the average number of clock pulses between successive wheel speed pulses; and

a fourth step of calculating the wheel speed from the result obtained by said third step.

4,398,261

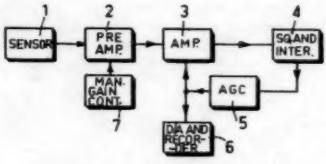
DEVICE FOR MEASURING THE LEVEL OF A VARIABLE SIGNAL WITH LOGARITHMIC CONVERSION

Bernard J. Saint-Oyant, Nice, and Jean G. Roche, Saint-Laurent du Var, both of France, assignors to Safare-Crouzet, Nice, France

Continuation of Ser. No. 974,089, Dec. 28, 1978, abandoned. This application Sep. 3, 1980, Ser. No. 183,809

Int. Cl.³ H03K *13/02*

U.S. Cl. 364—571 **8 Claims**



1. In a device for measuring, with logarithmic conversion, the level of a variable signal delivered by a sensor, comprising an amplification chain made up of a series of attenuators receiving the signal delivered by the sensor, a squaring and integrating chain for effecting the conversion of the value of the signal delivered by the amplification chain into its mean-square value, and a recorder for recording the level of the signal to be measured, characterized in that said attenuators are calibrated in dB and the device further comprises an automatic gain control circuit for receiving the output signal from the squaring and integrating chain and generating a digital control signal used to switch said attenuators in order to maintain constant the mean-square value of the output signal from said amplification chain and consequently the output signal of said squaring and integrating chain and a digital to analog converter for receiving an output signal from the automatic gain control circuit and generating an analog signal, said recorder recording said analog signal.

4,398,262

TIME MULTIPLEXED N-ORDERED DIGITAL FILTER

Tim A. Williams, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1981, Ser. No. 333,538

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **7 Claims**

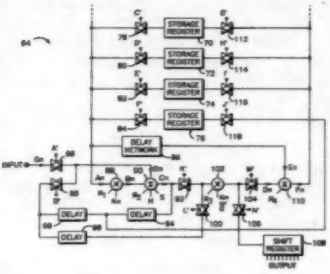
1. A time multiplexed n-ordered digital filter, where n is an integer, comprising:

storage means for selectively storing and providing, in response to the actuation thereof, a plurality of n rank ordered storage signals;

first multiplier means having a first input coupled to said

storage means, a second input coupled to a predetermined one of n rank ordered coefficient signals related to a mathematical expression of said digital filter, and an output for providing, in response to the actuation thereof, one of n rank ordered first signals representing the product of a corresponding one of n rank ordered stored signals and a corresponding one of n rank ordered coefficient signals;

first adder means having a first input coupled to the output of said first multiplier means, a second input coupled to a selected one of either an input signal or the next lower ranked one of said second signals, and an output for providing, in response to the actuation thereof, one of n rank ordered second signals representing the sum of the corresponding one of said first signals and a selected one of either an input signal or the next lower ranked one of said second signals;



second multiplier means having a first input coupled to the output of said first adder means, a second input coupled to a predetermined one of said coefficient signals, and an output for providing, in response to the actuation thereof, one of n rank ordered third signals representing the product of the corresponding one of said second signals and the corresponding one of said coefficient signals; and

second adder means having a first input coupled to the output of said second multiplier means, a second input coupled to said storage means, and an output coupled to said storage means for providing, in response to the actuation thereof, one of n rank ordered fourth signals representing the sum of the corresponding one of said third signals and the corresponding one of said stored signals.

4,398,263

CALCULATOR HAVING INTEGRATING FUNCTION

Hisashi Ito, Tanashi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,944

Claims priority, application Japan, Apr. 15, 1980, 55-50085; Apr. 15, 1980, 55-50086; Apr. 15, 1980, 55-50090

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—733 **4 Claims**

1. A calculator having an integrating function comprising:

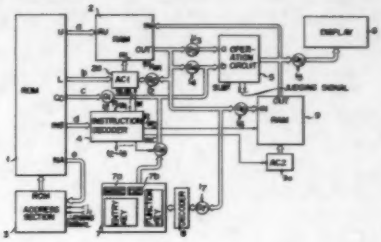
key input means having registering keys for setting at least a function to be integrated and the interval of integration, and an executing key for executing definite integration of the function to be integrated which is input by said registering keys over a definite integration interval which is input by said registering keys;

first memory means coupled to said key input means for storing the function to be integrated which is input by the key operation of said registering keys of said key input means;

second memory means coupled to said key input means for storing a dividing number for dividing said interval of integration;

dividing means coupled to said second memory means for dividing the interval of integration determined by the key operation of said registering keys of said key input means by the dividing number stored in said second memory means;

readout means coupled to said first memory means for sequentially reading out the function to be integrated from said first memory means; and



operating means coupled to said first memory means for sequentially performing the integrating function based on the function to be integrated read out by said readout means, every interval of integration divided by said dividing means, and the data for setting the interval of integration input by the key operation of said registering keys of said key input means.

4,398,264

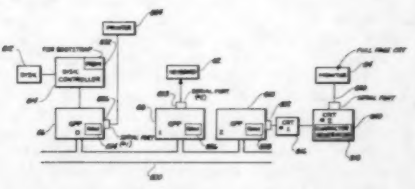
CIRCUIT TO ENABLE FOREGROUND AND BACKGROUND PROCESSING IN A WORD PROCESSING SYSTEM WITH CIRCUITS FOR PERFORMING A PLURALITY OF INDEPENDENTLY CONTROLLED FUNCTIONS

Robert A. Couper, Sunnyvale, and Bruce S. Denning, San Jose, both of Calif., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 12, 1980, Ser. No. 177,308

Int. Cl.³ G06F *3/02, 3/14*

U.S. Cl. 364—900 **11 Claims**



1. A word processing system, comprising:

(a) processing means for processing information, said processing means having the capability for foreground/background operation, whereby a first job may be run in the foreground while a second job runs independently and concurrently in the background;

(b) input means, operatively associated with said processing means for entering textual information and commands into said system, said input means normally operating under control of said foreground operation so that an operator can intervene in the processing of said first job, and said input means further comprising means for displaying information, said display means normally operating under control of said foreground and normally displaying information relating to said first job; and

(c) said processing means being responsive to a command from said input means to transfer control of said input means to said background operation so that said display means displays information relating to said second job and

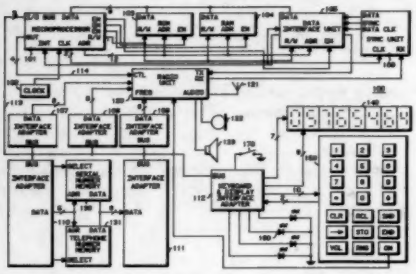
so that said operator may intervene in the processing of said second job, and said processing means being responsive to a second subsequent command from said input means to retransfer control of said input means to said foreground operation.

4,398,265

KEYBOARD AND DISPLAY INTERFACE ADAPTER ARCHITECTURE

Larry C. Puhl, Sleepy Hollow, and Lawrence E. Connell, Clarendon Hills, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1980, Ser. No. 187,305
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **13 Claims**



1. Interface adapter circuitry coupled to a plurality of input signals to a display having a plurality of display elements and further coupled to a self-clocking serial data bus having binary first and second forward data signal lines for receiving a binary data signal including data, address and control portions, transmitted from a signal source, the first and second forward data signals transmitted respectively on the first and second forward data signal lines having a first binary state before and after the data signal, the first forward data signal having a second binary state and the second forward data signal having the first binary state for data signal bits having a binary one state, the first forward data signal having the first binary state and the second forward data signal having the second binary state for data signal bits having a binary zero state, and the first and second forward data signals having the second binary state between successive data signal bits, said interface adapter circuitry comprising:

generating means coupled to the first and second forward data signal lines and being responsive to either the second binary state of the first forward data signal and first binary state of the second forward data signal, or responsive to the first binary state of the first forward data signal and the second binary state of the second forward data signal, for generating a clock signal;

latch means for storing and providing an output signal and being coupled to the first and second forward data signal lines for storing and providing a binary one state of the output signal in response to the second binary state of the first forward data signal and the first binary state of the second forward data signal, and storing and providing a binary zero state of the output signal in response to the first binary state of the first forward data signal and the second binary state of the second forward data signal;

receiving register means coupled to the latch means and the clock signal generating means and being responsive to the clock signal for serially receiving the latch means output signal, said received output signals being the binary data signal;

decoding means coupled to the receiving register means for decoding a predetermined address signal in the address portion of the binary data signal in the receiving register means and generating a chip select signal when the predetermined address signal is decoded; and

control means coupled to the decoding means and the receiving register means and being responsive to the chip select signal and the control signal portion of the binary data signal in the receiving register means for generating at least a first or a second control signal;

control register means coupled to the receiving register means and control means and being responsive to the first control signal for receiving the data portion of the binary data signal in the receiving register means, said received data portion including output signals for selecting a predetermined sequence of display elements;

display register means coupled to the receiving register means and control means and being responsive to the second control signal for receiving the data portion of the data signal in the receiving register means, said received data portion including output signals for the display; and

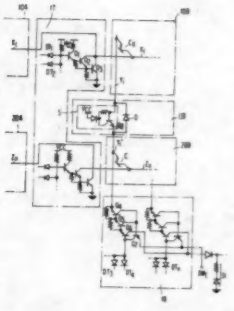
means coupled to the control register means and display register means for applying the display register output signals to the display elements in response to a predetermined one of the control register output signals.

4,398,266

INTEGRATED CIRCUIT

Teiji Tamura, and Hiroshi Mayumi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1980, Ser. No. 173,248
Claims priority, application Japan, Jul. 30, 1979, 54-97833
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—103 **11 Claims**



1. An integrated circuit comprising a first rectangular area, a second rectangular area adjacent to a first longitudinal side of said first rectangular area, a third rectangular area adjacent to a second opposite longitudinal side of said first rectangular area, a first group of row lines laterally extending in said second rectangular area, a second group of corresponding row lines laterally extending in said third rectangular area, a first group of column lines extending in the longitudinal direction in said second rectangular area, a second group of column lines extending in the longitudinal direction in said third rectangular area, a plurality of programmable elements disposed at intersections of the first group of row lines and the first group of column lines and at intersections of the second group of row lines and the second group of column lines, each of said programmable elements including a bipolar transistor coupled between one row line and one column line and being permanently changed from a first state, in which a base-emitter junction of the bipolar transistor is not broken down, to a second state, in which the base-emitter junction is broken down, by flowing a write current therethrough having a sufficient value for causing the breakdown of the base-emitter junction, a write

selection circuit formed on said first rectangular area, said write selection circuit having a plurality of current output terminals each connected to an associated one of said first group of row lines and an associated one of said second group of row lines and operatively producing the write current at a selected one of said output terminals, and a column selection circuit for selecting one of said first and second group of column lines, whereby a current path for the write current between a selected row line and a selected column line via a selected programmable element is established, said column selection circuit being arranged along adjacent lateral sides of said second and third rectangular areas.

4,398,267

SEMICONDUCTOR MEMORY DEVICE

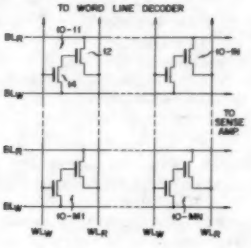
Tohru Furuyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 2, 1980, Ser. No. 212,103

Claims priority, application Japan, Dec. 11, 1979, 54-160522

Int. Cl.³ G11C *11/40*; H01L *29/78*

U.S. Cl. 365—182 **18 Claims**



1. A semiconductor memory device including a first MOS field effect transistor and a second MOS field effect transistor having a current path connected at one end to the gate electrode of the first MOS field effect transistor, the device comprising:

a semiconductor substrate of a first conductivity type constituting the channel of either of said first MOS field effect transistor or said second MOS field effect transistor;

a first polycrystalline semiconductor layer deposited on said semiconductor substrate and having an oxide layer interposed therebetween, said first polycrystalline semiconductor layer forming the channel of the other of the first MOS field effect transistor and the second MOS field effect transistor;

a first semiconductor region of the second conductivity type formed in the surface region of said semiconductor substrate such that one end portion of said first semiconductor region is positioned below the central portion of said first polycrystalline semiconductor layer; and

a second polycrystalline semiconductor layer formed on said semiconductor substrate and having an oxide layer interposed therebetween, one end portion of said second polycrystalline semiconductor layer being mounted on the central portion of said first semiconductor region, and wherein both end portions of said first polycrystalline semiconductor layer optionally act as the drain and source regions of the first MOS field effect transistor, one end portion of said first semiconductor region forming the gate region of said first MOS field effect transistor, the other end portion of said first semiconductor region comprising the source and drain regions of said second MOS field effect transistor with said second polycrystalline semiconductor layer interposed therebetween, and said second polycrystalline semiconductor layer constituting the gate region of said second MOS field effect transistor.

4,398,268

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

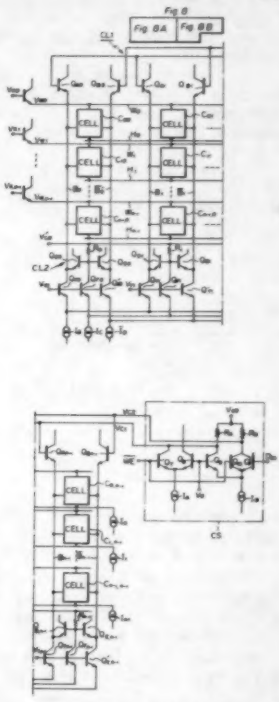
Kazuhiro Toyoda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 23, 1980, Ser. No. 171,274

Claims priority, application Japan, Jul. 26, 1979, 54-95346; Jul. 27, 1979, 54-95697

Int. Cl.³ G11C *7/00, 11/40*

U.S. Cl. 365—190 **6 Claims**



1. A semiconductor integrated circuit device comprising:

a plurality of word lines;

a plurality of word drivers, each connected to one of said word lines;

a plurality of hold lines;

a plurality of pairs of bit lines, each bit line having a variable potential and each bit line pair selectively conducting an associated current including a sink current;

a plurality of bit drivers, each connected to a corresponding pair of said bit lines;

a plurality of memory cells of integrated injection logic, each connected to a corresponding one of said word lines, to a corresponding one of said hold lines and to a corresponding pair of said bit lines,

each memory cell including:

injectors comprising first and second transistors of a first conduction type which have a common emitter connected to said corresponding one of said word lines;

a flip-flop comprising cross-coupled third and fourth transistors of a second conduction type, connected to said first and second transistors respectively, and an emitter connected to the corresponding pair of said bit lines;

fifth and sixth transistors of a second conduction type, each comprising a base and a collector both connected in parallel with said third or fourth transistor, respec-

tively and an emitter connected to the corresponding pair of said bit lines;

said third, fourth, fifth and sixth transistors being connected to the corresponding one of said hold lines; and

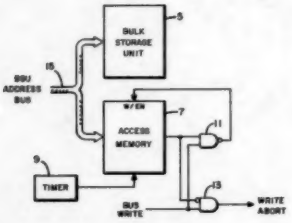
first clamp means for selectively raising the potential of a first bit line of each of said pairs of bit lines above that of the second bit line of each of said pairs of bit lines in response to a write enable signal and an input data signal, and for absorbing the sink current associated with each of said first bit lines.

4,398,269

MNOS OVER-WRITE PROTECTION CIRCUITRY

Raymond C. Hedin, Apple Valley, and Dennis L. Amundson, Bloomington, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 23, 1981, Ser. No. 286,224
Int. Cl.³ G11C 7/00
U.S. Cl. 365—195 **2 Claims**



1. Over-write prevention apparatus comprising:

means for producing an over-write time interval during the operation of a bulk storage unit (BSU);

means for flagging each unique address of a SUM that is accessed during said over-write interval; and

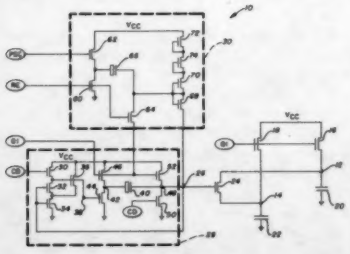
means responsively coupled to said flag means for interrupting and aborting any write instruction to said BSU if it is to an address thereof that has been previously accessed during any given over-write interval.

4,398,270

SELF-LOADING BOOTSTRAP CIRCUIT

Ronald T. Taylor, Irving, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Sep. 9, 1981, Ser. No. 300,609
Int. Cl.³ G11C 11/40
U.S. Cl. 365—203 **4 Claims**



3. The circuit for equilibrating the voltage level on the input/output lines of a semiconductor memory device for a read operation comprising:

means for precharging the input/output lines in response to a precharge clock signal;

a first field effect transistor having its source and drain terminals connected to the input/output lines;

a Schmitt trigger circuit precharged by the column decode signal and released by the feedback from the gate of said first field effect transistor;

second and third field effect transistors having their drain terminals connected to the terminals of said bootstrap capacitor, the source terminals of said second and third transistors connected to voltage supply, and said second and third transistors having their gates connected to the precharge clock signal to turn said second and third transistors on;

a fourth field effect transistor having its source terminal connected to the node between the drain terminal of said second transistor and a terminal of said bootstrap capacitor, the drain terminal of said fourth transistor connected to ground and the gate of said fourth transistor connected to the output of said Schmitt trigger circuit, whereby the Schmitt trigger circuit is precharged by the column decode signal and released under the self-timed action of the voltage level of the gate of said first transistor to allow said bootstrapped capacitor to be raised to the bootstrap voltage level by a single precharge clock signal; and

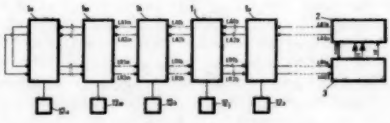
means for removing the equilibration of the input/output lines in response to a column decode clock signal at the beginning of a read operation.

4,398,271

DEVICE FOR DATA TRANSMISSION BETWEEN SEISMIC DATA ACQUISITION DEVICES AND A RECORDING DEVICE

Jacques Cretin, Le Chesnay, and Claude Beauducel, Henouville, both of France, assignors to Institut Francais du Petrole, Paris and Compagnie Generale de Geophysique, Massy, both of, France

Filed Dec. 5, 1980, Ser. No. 213,760
Claims priority, application France, Dec. 7, 1979, 79 30287
Int. Cl.³ G01V 1/22; H04B 3/46
U.S. Cl. 367—20 **21 Claims**



1. A device for transmitting information from a plurality of seismic acquisition devices to a central receiving and recording device (3), comprising: a plurality of interconnection systems respectively associated with the data acquisition devices, and said interconnection system being serially connected respectively to a transmission line selection assembly (2) through at least two separate outward transmission lines made up of a plurality of sections, and to the central receiving and recording device through at least two separate inward transmission lines made up of a plurality of sections; each interconnection system comprising means for detecting signals received on said outward transmission line sections reaching said interconnection system; switching means, controlled by said detecting means, for directing the received signals or signals emanating from a seismic data acquisition device associated therewith, onto one of said outward or inward line sections from said interconnection system, and said switching means comprising a first switch (S4) for selecting one of said outward transmission line sections reaching the interconnection system, a second switch (S0) for connecting the transmission line section selected by the first switch when the device is in operation, or for connecting the output of the associated acquisition device, to one of the sections of the outward transmission line from the interconnection

system, or to an input (e33) of a third switch (S3) whose other inputs are connected to the sections of the inward transmission line reaching the interconnection system, and with said third switch being adapted for directing signals received on one of its inputs onto the sections of the inward transmission line running from the interconnection system; the line selection assembly being adapted for transmitting information or orders in the form of digital signals made up of bits series serially transmitted by a clock member and having a uniform structure or network made up of a first portion for validating the digital signals, a second portion employed for identifying the nature of the informations or orders transmitted in the digital signals as well as the interconnection system associated with said digital signals, and a third portion available for transferring data between the interconnection systems and the central receiving and recording device; and said detecting means, for detecting the signals received on the outward transmission line sections reaching each interconnection system, comprising means (4,5) for reconstituting a clock signal, capable of being employed as a time basis, from digital signals transmitted on the outward transmission lines, an element (6) for detecting the clock signals and a circuit for the network recognition (9) associated with a decoding member (11) for recognizing the nature of the information or orders included in the received digital signals.

4,398,272

COMPUTERIZED TRUCK INSTRUMENTATION SYSTEM

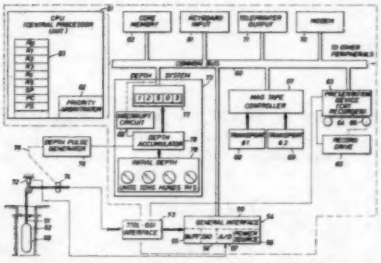
Elbert E. Sibert, Oran, N.Y., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 951,827, Oct. 16, 1978, which is a continuation of Ser. No. 356,234, May 1, 1973, abandoned. This application Jun. 10, 1980, Ser. No. 158,258

Claims priority, application United Kingdom, May 4, 1972, 20846/72

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—33 **20 Claims**



7. A method of acquiring and recording, well logging signals which are representative of measurements derived from a well logging tool at a measure point on said tool which is different from a reference point in a well bore traversing earth formations comprising the steps of:

acquiring a well logging measurement as a data sample representative of a measure point on a well logging tool when said measure point was at a known measurement position in a well bore which is different from a reference point:

storing said data sample in a storage facility at a storage location indicated by an input location pointer referenced to said known measurement position;

advancing said input location pointer to a different storage location and repeating said acquiring and storing steps for different known measurement positions of said measure point as said well logging tool moves through said borehole; and

retrieving at a subsequent time one of said stored data samples from the storage location in which it was stored and whose known measurement position then corresponds to the position of said reference point in said well bore, said storing and retrieving occurring independent of said storing such that during any selected time period the number of data samples stored may be different from the number of data samples retrieved.

4,398,273

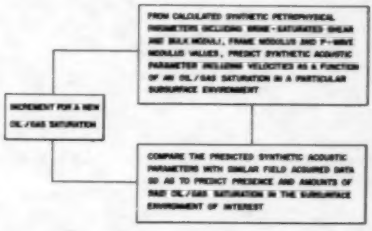
METHOD FOR INTERPRETING SEISMIC RECORDS TO YIELD INDICATIONS OF GAS/OIL IN AN EARTH FORMATION

Don D. Thompson, Corona Del Mar; Robert J. S. Brown, Fullerton, and Richard J. Runge, Anaheim, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 81,292, Oct. 2, 1979, abandoned. This application Nov. 18, 1981, Ser. No. 322,509

Int. Cl.³ G01V *1/32, 1/34*

U.S. Cl. 367—73 **25 Claims**


FROM CALCULATED SYNTHETIC PETROPHYSICAL PARAMETERS INCLUDING BRINE-SATURATED SHEAR AND BULK MODULI, FRAME MODULUS AND P-WAVE MODULUS VALUES, PREDICT SYNTHETIC ACOUSTIC PARAMETER INCLUDING VELOCITIES AS A FUNCTION OF AN OIL/GAS SATURATION IN A PARTICULAR SUBSURFACE ENVIRONMENT
INCREMENT FOR A NEW OIL/GAS SATURATION
COMPARE THE PREDICTED SYNTHETIC ACOUSTIC PARAMETERS WITH SIMILAR FIELD ACQUIRED DATA SO AS TO PREDICT PRESENCE AND AMOUNTS OF SAID OIL/GAS SATURATION IN THE SUBSURFACE ENVIRONMENT OF INTEREST

1. System for resolving event characteristics of an acoustic log of a first well so as to determine gas/oil fractions in a selected zone of an earth formation by creating synthetic gas-indicating characteristics from petrophysical parameters corresponding to each selected zone of interest, comprising:

(A) a digital programmable computer for:

(i) predicting brine-saturated bulk and shear moduli (Kw* and Gw*) using empirical equations containing coefficients and a P-wave modulus value (Pw*), said coefficients varying in empirical fashion as a function of at least porosity, pressure and temperature, said P-wave modulus value (Pw*) being a P-wave modulus value which corresponds to said zone of interest based on well logging geologic data;

(ii) estimating a frame modulus value (Ka) of said zone of interest using a relationship involving Kw*, Kb, Km and ϕ, where Kw* is brine-saturated bulk density of the aggregate, Kb is the bulk modulus of brine, and Km is the bulk modulus of the solid material making up the zone of interest and ϕ is porosity;

(iii) predicting bulk modulus values Kg* with the gas/oil present in differing amounts in said zone of interest using a relationship involving Ka of step (ii), Km, ϕ, Kfg, where Kfg is the bulk modulus of a gas/oil mixture;

(iv) assuming Gw* is equal to Ggas/oil*, predicting P-wave modulus of the zone with gas/oil present (Pgas/oil*) in differing amounts based on the relationship

$$P_{gas/oil^*} = K_{gas/oil^*} + (4/3)G_{w^*}$$

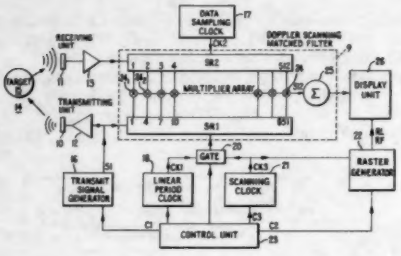
(v) predicting at least acoustic velocities within said zone from said P-wave modulus values (Pgas/oil*) of step (iv) as a function of gas/oil saturation; and

(B) comparator means comparing said predicted velocities or derivations thereof with actual velocities or derivations thereof, from said acoustic record to predict presence and amounts of gas/oil fractions in said zone of interest.

4,398,274
WITHIN-PULSE DOPPLER SCANNING

Pornchai Chotiros, Birmingham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 6, 1981, Ser. No. 232,220
Claims priority, application United Kingdom, Feb. 8, 1980, 8004260
Int. Cl.³ G01S *15/58*
U.S. Cl. 367—90 **19 Claims**



1. A method of detecting a Doppler-shifted waveform in an electrical signal including the steps of:

(a) generating a replica signal derived from the waveform prior to Doppler shift;

(b) sampling the replica signal at intervals changing in accordance with a first geometric progression;

(c) storing the replica samples in successive storage positions of a first storage means whereby the profile of the stored replica samples has a progressively increasing distortion along its length compared to the replica signal;

(d) storing a sample of the electrical signal in a second storage means by sampling means arranged for sampling at uniform sampling intervals;

(e) correlating the samples of the electrical signal at uniformly spaced storage positions in the second storage means with stored samples of the replica signal profile at storage positions in the first storage means selected such that the ratio of the numbers of storage positions between successive correlated samples in said first storage means is substantially a geometrical progression in the same sense as said first geometric progression so as to cancel the progressively increasing distortion of the replica signal profile;

(f) performing a correlation scan by moving the stored replica signal profile through a range of stored positions;

(g) deriving a correlation output signal indicating degree of correlation between the correlated signals during a scan; and

(h) repeating steps (d) to (g) to build up and subsequently refresh a uniform stored profile of the electrical signal while performing successive correlation scans.

4,398,275
LINEAR FREQUENCY SWEEP GENERATOR FOR CONTINUOUS TRANSMISSION FM SONAR

William J. Zehner, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 2, 1981, Ser. No. 307,923
Int. Cl.³ G01S *7/52*; H03B *23/00*
U.S. Cl. 367—137 **7 Claims**

1. A linearly swept frequency signal generator for use in an FM sonar, said generator comprising:

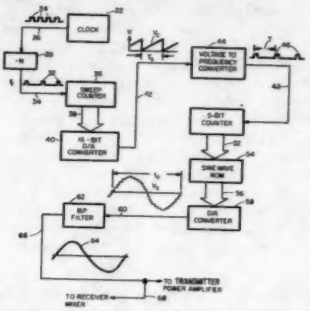
a source of first pulses at a first frequency;

first counter means, responsive to said first pulses, for repeatedly counting to a predetermined count;

means, responsive to the changing count in said first counter means, for providing incremental changes in a voltage ramp output;

means, responsive to said voltage ramp output, for providing second pulses at a second frequency that changes in pulse rate with the voltage of said voltage ramp output;

second counter means, responsive to said second pulses, for providing a digital output corresponding with the pulse rate of said second frequency;



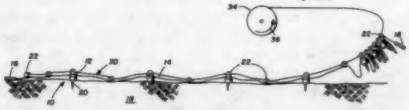
memory means, responsive to said digital output of said second counter means to provide a digital output corresponding to successive points along a predetermined cyclical waveform that changes in frequency in accordance with changes in said second frequency; and

means, responsive to said digital output of said memory means, for providing a carrying voltage output as said linearly swept frequency signal.

4,398,276
APPARATUS AND METHOD FOR GEOPHONE SENSOR STRING PLACEMENT

John A. Kruppenbach, Lancaster, Tex., assignor to Energy Analysts Incorporated, Dallas, Tex.

Filed Sep. 24, 1980, Ser. No. 190,640
Int. Cl.³ G01V *1/18*
U.S. Cl. 367—191 **5 Claims**



1. A method of collecting and storing a geophone sensor string comprising a plurality of sensors spaced predetermined distances apart on a surface, a cable interconnecting said sensors and a plurality of ring members for hanging said string for storage, comprising the steps of:

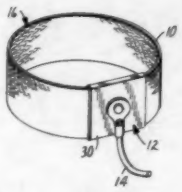
securing a line to a ring member adjacent one end of the geophone sensor string and passing said line through selected ring members for substantially unrestrained motion through said ring members, said line extending from a ring member adjacent the opposite end of the geophone sensor string; and

drawing said line to fold said interconnecting cable so that the geophone sensor string is gathered for storage.

4,398,277
CONDUCTIVE ELASTOMERIC FABRIC AND BODY STRAP

Robert W. Christiansen, Clayton Township, Polk County, Wis., and Walter M. Westberg, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 27, 1981, Ser. No. 286,766
Int. Cl.³ H05F 3/02
U.S. Cl. 361—220 **15 Claims**



1. A conductive body strap, comprising:

a fabric having at least one interlaced yarn, said yarn including an end having an electrically conductive fiber plaited with an end having an elastomeric fiber;

mechanical connection means coupled to said fabric for forming said fabric into a closed loop with an inside surface adapted to contact the body; and

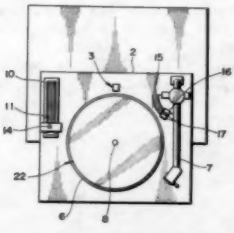
electrical connection means coupled to said fabric for contacting said electrically conductive fiber and for providing a connection point for an electrical cable capable of connecting said conductive body strap to ground;

whereby said conductive body strap has both elasticity and electrical conductivity.

4,398,278
RECORD PLAYER PROGRAM SELECTOR

Kiyoshi Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,074
Claims priority, application Japan, Dec. 27, 1980, 55-191607[U]
Int. Cl.³ G11B 7/00, 3/00
U.S. Cl. 369—33 **9 Claims**



1. Program selector apparatus for a record player of the type having a turntable supported on a movable carrier which is actuable to move the turntable into and out of a housing, and having a tone arm which is movable across the surface of a record on said turntable and controllable to play back a selected one of plural programs recorded on said record in separate segements spaced apart from each other by respective inter-program gaps, said apparatus comprising:

inter-program gap detecting means for detecting the location of each inter-program gap on said record and for producing an inter-program gap signal representing said location as said turntable is moved into said housing;

selecting means for selecting a program to be played back, said selecting means selecting an inter-program gap signal representing the location on said record of said selected program;

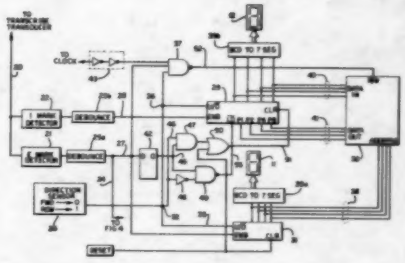
tone arm position detecting means for detecting the position of said tone arm as said tone arm moves across the surface of said record and for producing a tone arm position signal representing the position of said tone arm along said record; and

control means for comparing said tone arm position signal to said selected inter-program gap signal and for producing a control signal in response to said comparison to cause said tone arm to play back the selected program.

4,398,279
DIGITAL DISPLAY FOR DICTATION TRANSCRIBER FOR INDICATING REMAINING TAPE WITHIN DISCRETE SEGMENTS OF DICTATION

Theodore Titus, IV, Tucker, and Julius B. Bagley, Marietta, both of Ga., assignors to Lanier Business Products, Inc., Atlanta, Ga.

Filed May 4, 1981, Ser. No. 260,257
Int. Cl.³ G11B 3/82, 27/34
U.S. Cl. 369—58 **10 Claims**



1. In a record playback apparatus for transcribing dictation recorded on a record medium as said record medium was moved in a first direction, said record medium also having first-type indicia signals and second-type indicia signals distinct from said first-type indicia signals recorded thereon; said record playback apparatus including transport means for moving said record medium in said first direction past a transducer and alternately in a second direction opposite said first direction past said transducer, detection means connected to said transducer for providing a first type detection signal in response to one of said first type indicia signals moving past said transducer and for providing a second type detection signal in response to one of said second type indicia signals moving past said transducer; direction sensing means coupled to said transport means for providing a first type direction signal in response to said transport means moving said record medium in said first direction and alternately for providing a second-type direction signal in response to said transport means moving said record medium in said second direction, the improvement of a display comprising:

an addressable memory;

first counting means connected to said detection means for counting said first type detection signals as said record medium moves past said transducer to provide a first count output;

means connecting said first counting means and an address input of said addressable memory for providing an address corresponding to said first count output;

second counting means connected to said detection means for counting said second type detection signals as said record medium moves past said transducer to provide a second count output;

means connecting said second counting means and data ports of said addressable memory

control means connected to said detection means, said addressable memory, and said direction sensing means for writing said second count output into said addressable memory in response to each occurrence of one of said first-type detection signals during the concurrent presence of said second-type direction signal and alternately for presetting said second counting means from said addressable memory in response to each occurrence of one of said first-type detection signals during the concurrent presence of said first-type direction signal; and

display means for displaying said second count output.

4,398,280

INFORMATION RECORDING DISK PLAYER

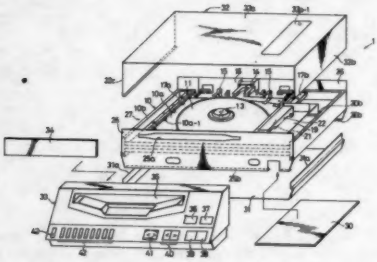
Akira Ishigami, Toride, and Yoshikatsu Imano, Yawahara, both of Japan, assignors to Victor Company of Japan Limited, Yokohama, Japan

Filed Oct. 13, 1981, Ser. No. 310,695

Claims priority, application Japan, Oct. 13, 1980, 55-142754; Oct. 13, 1980, 55-145485[U]

Int. Cl.³ H02B *1/00*; G11B *17/00*

U.S. Cl. 369—75 **9 Claims**



1. An information recording disk player, comprising:

(a) a chassis made of a noncontractive synthetic resin, said chassis having a flat body and peripheral wall portions integrally formed with said flat body around the circumference of said flat body, said peripheral wall portions extend along a plane which is normal to the plane of said flat body;

(b) first means attached to said chassis for loading and unloading an information recording disk in and from said disk player;

(c) second means attached to said chassis for rotating a loaded disk to be played back;

(c) third means attached to said chassis for picking up information from said disk;

(d) fourth means for processing the output signal from said third means;

(e) a casing having a front plate, a rear plate, a top plate and a bottom plate all attached to said chassis, each of said front and rear plates having inwardly bent edges at its upper and lower portions so that said front and rear plates function as stands which hold said chassis horizontally when manufacturing said disk player, said bottom plate covering the lower portion of said chassis and said top plate covering the upper and side portions of said chassis so that all the mechanisms of said player are entirely enclosed by said casing; and

(f) a front panel attached to said front plate for holding manipulation knobs and displays.

4,398,281

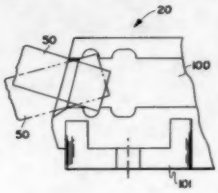
CADDY LOADING VIDEO DISC PLAYER

Larry M. Hughes, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 16, 1981, Ser. No. 311,839

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—77 **5 Claims**



3. In a record player for recovering prerecorded information from a disc record; said record being enclosed in a planar protective caddy consisting of a sleeve having a record enclosing cavity in communication with an edge opening and a record retaining spine slidably disposed in said cavity; said record retaining spine having an opening for receiving an enclosed record to form a record/spine assembly; an occupied caddy being inserted into an input slot provided in said player substantially along a path defined by a pair of guide rails to load an enclosed record/spine assembly into said player; said player having a mechanism for extracting said enclosed record/spine assembly from said sleeve for retention in said player when said sleeve is withdrawn from said player after a full insertion of said caddy into said player; said sleeve being reinserted into said player along said path for retrieving said record/spine assembly; an improvement comprising a pair of notches provided in at least one of said guide rails in the vicinity of said caddy input slot on opposite sides of said caddy insertion path for reducing the possibility of an angular entry of said sleeve into said player to ensure proper retrieval of said record/spine assembly from said player.

4,398,282

CAPACITANCE DETECTION TYPE STYLUS FOR GROOVELESS DISC RECORDS AND METHOD FOR MAKING SAME

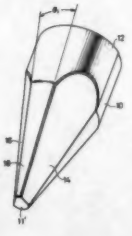
Keiji Segawa; Norio Matsuda, and Masaki Murakami, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 8, 1981, Ser. No. 261,793

Claims priority, application Japan, May 10, 1980, 55-61903

Int. Cl.³ G11B *3/46, 9/06*

U.S. Cl. 369—126 **12 Claims**



1. A reproducing stylus for grooveless capacitance disc records in which signals are stored in the form of minute pits along a plurality of tracks having particular widths, comprising: a body of hard, insulative material having a truncated,

generally conical end portion, said conical end portion having a pair of angled, substantially identical surfaces extending from the truncated end of said conical end portion toward the opposite end of said body in a symmetrical relationship with respect to a plane which includes the center axis of said body and bisects the angle formed between said surfaces, so that said truncated end has an area defined by a front curved edge spanning a plurality of the widths of said tracks and a rear curved edge spanning the width of one of said tracks, and by a pair of angled straight edges each extending between opposite ends of said front and rear curved edges, and an electrode extending from said rear curved edge to the opposite end of said body.

4,398,283

SUPERHIGH-FREQUENCY DUPLEX MODE TELECOMMUNICATIONS DEVICE

Bernard Pottier, Saint Georges-de-Luzencon, 12100 Millau, France

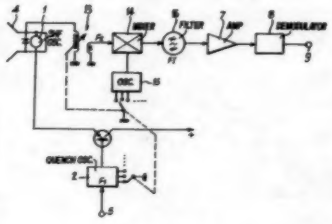
PCT No. PCT/FR79/00132, § 371 Date Aug. 21, 1980, § 102(e) Date Aug. 29, 1980, PCT Pub. No. WO80/01446, PCT Pub. Date Jul. 10, 1980

PCT Filed Dec. 28, 1979, Ser. No. 197,100

Claims priority, application France, Dec. 29, 1978, 78 36854

Int. Cl.³ H04B *1/56*

U.S. Cl. 370—30 **5 Claims**



1. In a superhigh frequency duplex mode telecommunications device for communication between a first station and others in a network of stations, each of said stations in said network having a superhigh frequency oscillator providing a carrier frequency to an antenna, and a quench oscillator providing a quench signal, said quench oscillator at each of said stations providing a specific frequency signal acting as a subcarrier signal, said carrier signal being frequency modulated by the information it is desired to transmit, and in which each of said stations further includes a selective filter tuned to the frequency of said quench signal utilized in the station from which it is desired to receive a signal and a frequency modulation detector for detecting said signal, said stations operating in superregeneration, using the same antenna for transmission and reception, said device comprises:

preselector means coupled to said oscillator for tuning said quench oscillator to the frequency assigned to a specific station in said network with which said first station desires to communicate;

means coupled to said preselector means for mixing;

adjustable frequency heterodyne oscillator coupled to said mixer, said heterodyne oscillator being adjusted to provide a constant heat frequency resulting from the mixing of said heterodyne oscillator's output frequency and said quench frequency of said other station in said network whose signal it is desired to receive;

wherein said first station quench oscillator is tunable to frequencies corresponding to said other stations in said network; and

mechanical switch means coupled to said quench oscillator, said preselector and said heterodyne oscillator, for the simultaneous frequency adjustment thereof.

4,398,284

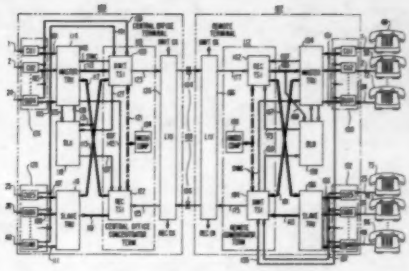
CONCENTRATOR IN A SUBSCRIBER LOOP DIGITAL CARRIER SYSTEM

Ronald J. Canniff, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 12, 1980, Ser. No. 186,617

Int. Cl.³ H04Q *11/04*; H04J *3/02*

U.S. Cl. 370—56 **12 Claims**



1. A method of concentrating encoded signals in a digital carrier transmission system

characterized by the steps of

(1) demultiplexing and storing digital codes from a plurality of multiplexed digital pulse streams alternately in first and second sections of a memory (1300,1302),

(2) simultaneously, while storing said digital codes, retrieving a selected and fewer number of stored digital codes from the opposite one of said first and second sections of said memory (1300,1302), and

(3) multiplexing said selected fewer number of digital codes to form a single multiplexed digital pulse stream.

4,398,285

TIME-DIVISION MULTIPLEX SWITCHING NETWORK

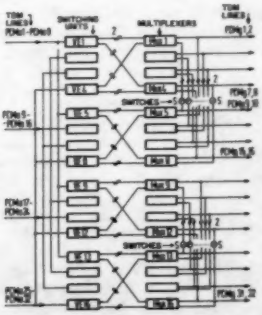
Karl A. Lutz, Munich, and Eberhard Knorpp, Gauting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,678

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016706

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—58 **3 Claims**



1. A time-division multiplex switching network, comprising:

a plurality of switching units, constructed as time stages, arranged in separate groups, and operable to chronologically and spatially assign time channels;

a respective plurality of time-division multiplex lines for an incoming transmission direction connected to said switch-

ing units, such that the lines connected to a switching unit of one group are also connected to a corresponding switching unit in each other group;

per switching unit group, a plurality of multiplexers equal in number to the number of switching units and each including a plurality of inputs, a plurality of normally-used outputs equal in number to the number of said incoming lines connected to a switching unit, and a plurality of normally-unused outputs, said inputs of each of said multiplexers divided into groups of equal number and each such group connected to a like number of outputs of said switching units such that each switching unit of a switching unit group is connected to each multiplexer assigned to that switching unit group; and

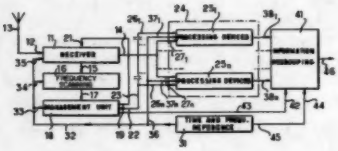
a plurality of normally-open switches connected between at least a portion of said normally-used outputs and corresponding normally-used outputs and operated when the respective switching portion fails.

4,398,286

RADIO METHOD AND APPARATUS FOR GATHERING AND PROCESSING INFORMATION COMING FROM A PLURALITY OF STATIONS

Michel Geesen, Antony; Jacques Mourant, Maurepas, and Daniel P. Ludwig, Ranonville, all of France, assignors to Electronique Marcel Dassault & Centre National d'Etudes Spatiales, Paris, France

Continuation-in-part of Ser. No. 38,770, May 14, 1979, abandoned. This application Jul. 7, 1980, Ser. No. 166,621
Claims priority, application France, May 12, 1978, 78 14339
Int. Cl.³ H04J *1/05, 1/16;* **H04B** *1/06, 17/00*
U.S. Cl. 370—69.1 **30 Claims**



23. Apparatus for acquiring a plurality of input signals received asynchronously at unknown frequencies within a known input frequency band comprising:

means for analyzing the frequency spectrum of said input frequency band to produce at least one respective frequency estimate indication for each input signal detected therein;

a plurality of processing devices each having means for setting operating frequency thereof in response to such a frequency estimate produced and means operative to progressively tune the operating frequency to that of an input signal having a frequency in the vicinity of the setting frequency estimate; and

means for selectively allocating each frequency estimate produced by said analyzing means to the setting means of one of said processing devices in dependence upon the setting frequency estimate of at least one of said processing devices.

4,398,287

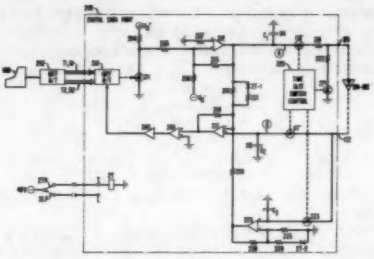
DIGITAL SWITCHING OVER PAM BUS SYSTEM

Douglas A. Spencer, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 1, 1981, Ser. No. 298,381
Int. Cl.³ H04J *3/02;* **H04Q** *11/04*
U.S. Cl. 370—85 **9 Claims**

1. An arrangement for establishing a uniform slicing level in a PAM bus time division switching system serving a plurality of ports and including means for defining a repetitive sequence of time slots, a summing bus for receiving a signal sample from one of said ports and a distribution bus for delivering said signal sample to one of said ports during each of said time slots, comprising

means for clamping said summing bus to a reference potential during a predetermined preamble portion of each of said time slots,



means for measuring the voltage appearing on said distribution bus during each said time slot preamble,

differential slicing means having an input connected to said distribution bus, and

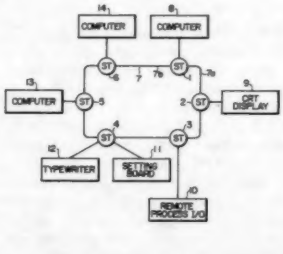
means controlled by said measuring means for adjusting the slicing level of said slicing means during the remainder of each said time slot.

4,398,288

LOOP TYPE DATA HIGHWAY SYSTEM FOR DATA TRANSMISSION

Sadao Mizokawa; Seiichi Yasumoto, and Masahiro Takahashi, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 229,180
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—86 **4 Claims**



1. A looped highway system for data transmission, comprising: a plurality of stations connected in series through a common bus to form a closed loop, in which data transmission between apparatus connected with said stations is carried out through the corresponding stations, wherein each of said stations includes a receiver and a transmitter;

wherein one of said stations includes means for generating a clock signal, while the remaining stations include means having a phase locked loop for deriving the clock signal out of the data which has been received through the receiver therein;

each of said remaining stations including first monitor means for detecting that the data received through the receiver thereof has lost a predetermined periodicity, and second monitor means for detecting that said phase locked loop is at its synchronous state, and control means responsive to the output of said first monitor means for interrupting the feed of the data therefrom to the adjoining station from the transmitter thereof for a predetermined time period

and for allowing the feed of data to said highway on condition that said predetermined time period has elapsed and that said second monitor means provides an output indicating that said phase locked loop is at its synchronous state.

4,398,289

METHOD FOR THE TRANSMISSION OF DATA PACKETS

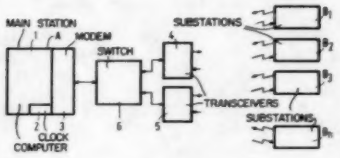
Frederik C. Schoute, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 17, 1981, Ser. No. 235,171

Claims priority, application Netherlands, Feb. 15, 1980, 8000941

Int. Cl.³ H04J 3/02

U.S. Cl. 370—93 **2 Claims**



1. An improved method for the transmission of data packets from a plurality of substations to a main station via a channel they have in common, the main station transmitting a synchronizing signal which indicates the beginning of a frame which is divided into a sequence of time slots of mutually equal lengths, those substations which have a data packet ready for transmission to the main station transmitting this packet to the main station in a time slot which is randomly selected from the sequence of time slots, the main station counting the time slots which are unmutilated, empty and mutilated respectively depending on whether an unmutilated, no packet or a mutilated packet is received, characterized in that said method further includes the steps of:

determining in the main station the number of time slots in the next frame on the basis of the determination of the number of unmutilated, empty and mutilated time slots in the history of frames;

taking into consideration the conditional probabilities of unmutilated, empty and mutilated time slots, given the number of substations;

choosing said number of time slots in dependence on the a posteriori expected value in accordance with

$$r = g_i \cdot b_{gi} + e_i \cdot b_{ei} + s_i \cdot b_{si} - s_i$$

where r represents the estimation of the number of packets ready for transmission to the main station, g_i represents the number of time slots in which a mutilated packet has been transmitted in frame i, e_i represents the number of time slots in which no packet is transferred, s_i represents the number of time slots in which an unmutilated packet has been transmitted in frame i, b_{gi} represents the a posteriori expected value of the number of substations transmitting simultaneously in one slot, given that the time slot contains a mutilated packet, b_{ei} represents the a posteriori expected value of the number of substations transmitting simultaneously in one slot given that the time slot contains no packet and b_{si} represents the a posteriori expected value of the number of substations transmitting simultaneously in one slot, given that the time slot contains an unmutilated packet; and that the number of time slots in a frame is transmitted as part of the synchronizing signal to said substations.

4,398,290

PROCESS AND APPARATUS FOR DIGITAL DATA COMMUNICATION USING PACKET SWITCHING

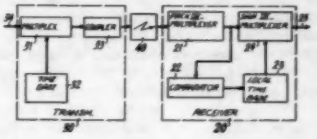
Michel Mathieu; Pierre Charbonnel, both of Betton, and Jean-Claude Pacaud, Rennes, all of France, assignors to Centre National d'Etudes des Telecommunications and Etablissement Public de Diffusion dit Telediffusion de France, both of, France

Filed Jun. 4, 1981, Ser. No. 270,623

Claims priority, application France, Jun. 6, 1980, 80 12672

Int. Cl.³ H04L 11/20; H04J 6/02; G06F 11/00

U.S. Cl. 370—94 **6 Claims**



1. In a digital data communication apparatus including a sender location and a receiver location, a data insertion device located at said sender location, having means for structuring the digital data as multibit words into frames having a fixed length l and each preceded with a frame lock word of identifiable constitution and means for assembling said frames into short packets all have the same predetermined length L, with $L = kl$, where k is a predetermined integer programmed at said sender location and receiver location whereby said lock words have the same location in successive packets.

4,398,291

SATELLITE COMMUNICATION SYSTEM FOR SWITCHING FORMATS WITH REFERENCE TO SUPER-FRAME TIME SLOTS

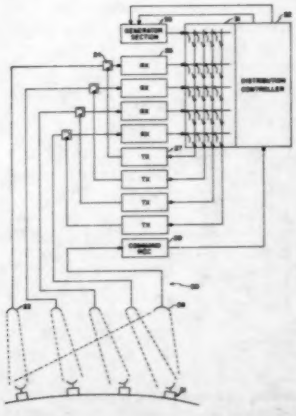
Toshinori Hotta, and Yukio Takimoto, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 275,706

Claims priority, application Japan, Jun. 23, 1980, 55-84760; Jun. 23, 1980, 55-84761; Jun. 23, 1980, 55-84762

Int. Cl.³ H04J 3/06

U.S. Cl. 370—104 **9 Claims**



5. In a circuit arrangement for use on board a satellite in carrying out communication among a plurality of terrestrial zones, each comprising at least one earth station, said at least one earth station being used for sending an up-link sequence of time division multiple access signals to said circuit arrange-

ment and for receiving a down-link sequence of time division multiple access signals from said circuit arrangement, one of the earth stations of said zones being for sending a format specifying signal and a format switching command to said circuit arrangement, said circuit arrangement comprising first memory means for memorizing a first switching format to produce a first sequence of switching signals, second memory means responsive to said format specifying signal for memorizing a second switching format to produce a second sequence of switching signals, frame pulse generating means for generating frame pulses at a predetermined frame period, selecting means responsive to said frame pulses and said command for selecting one of said first and said second sequences at a time, and a switching matrix responsive to the selected one of said first and said second sequences for distributing the time division multiple access signals of each up-link sequence to the down-link sequences for the respective zones, said switching matrix being operatively coupled to said frame pulse generating means to intersperse a plurality of down-link frame alignment bursts in each time division multiple access signal of each down-link sequence in synchronism with said frame pulses, the improvement wherein:

said selecting means comprises:

counting means for counting said frame pulses to a predetermined natural number to define super-frame time slots at a super-frame period equal to said frame period multiplied by said predetermined natural number; and

switching means for switching said first and said second sequences from one to the other with reference to said super-frame time slots and said command;

said switching matrix being operatively coupled further to said counting means to make each down-link sequence include information specifying said super-frame time slots, said information being for making the earth stations of the respective zones synchronize the time division multiple access signals of the respective up-link sequences during the super-frame time slots thereby specified.

4,398,292

METHOD AND APPARATUS FOR ENCODING DIGITAL WITH TWO ERROR CORRECTING CODES

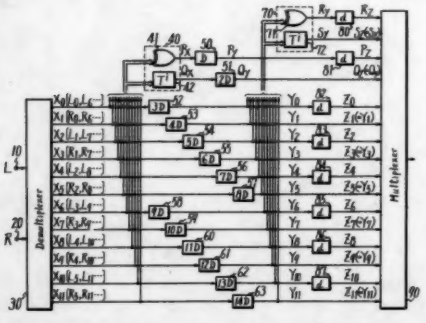
Toshitada Doi, and Kentarou Odaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 23, 1981, Ser. No. 237,487

Claims priority, application Japan, Feb. 25, 1980, 55-22605

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—39 **25 Claims**



1. A method of transmitting digital data words, comprising the steps of distributing successive data words to a plurality of respective channels to form successive data blocks, each data block being comprised of the data words in said plural channels; generating a first error correcting code as a function of at least the words included in said data block, said first error correcting code being adapted for use in correcting at least one word which is erroneous in said data block; selectively delaying, by different respective time delays, the data words included in said data block to form a time-interleaved data block comprised of time-interleaved data words; generating a second error correcting code as a function of at least the words included in said time-interleaved data block, said second error correcting code being adapted for use in correcting at least one word which is erroneous in said time-interleaved data block; and combining said first error correcting code, said second error correcting code and said time-interleaved data block to form a transmission block.

4,398,293

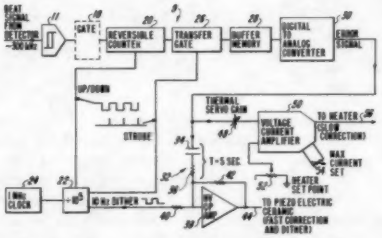
FREQUENCY STABILIZATION FOR TWO-MODE LASER

John L. Hall, Boulder, Colo.; Thomas M. Baer, Mountain View, Calif., and Frank V. Kowalski, Golden, Colo., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Sep. 8, 1981, Ser. No. 300,363

Int. Cl.³ H01S *3/13*

U.S. Cl. 372—32 **35 Claims**



1. A frequency stabilization system for a laser having two modes oscillating in the same laser with the beat frequency therebetween being dependent upon the frequency offset of the oscillator frequency from the center of the laser gain curve, said system comprising:

digital integration means for receiving said beat frequency from said laser and producing therefrom a digital output indicative of the displacement of the oscillator frequency from the center of the laser gain curve; and

converter means for receiving said digital output from said digital integration means and responsive thereto producing an analog error-correction signal to enable centering of said oscillator frequency with respect to the center of said laser gain curve.

4,398,294

HIGH POWER NUCLEAR PHOTON PUMPED LASER

Thomas G. Miller; John E. Hagefstration, both of Huntsville, Ala.; Dennis R. Womack, Knoxville, Tenn., and Bonnie G. McDaniel, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

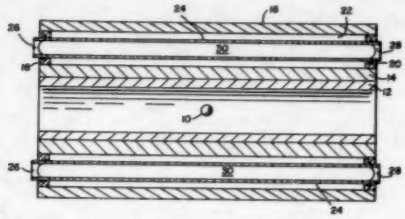
Filed Dec. 5, 1980, Ser. No. 213,527

Int. Cl.³ H01S *3/091*

U.S. Cl. 372—70 **7 Claims**

1. A high power nuclear photon pumped laser comprising a neutron source capable of producing at least 10^{15} neutrons in a 100 nsec to 100 μsec pulse, a material means with a large neutron inelastic scattering cross section mounted adjacent said neutron source for converting neutron energy from said neutron source to gamma and X-ray energy, a moderator material means mounted adjacent said material means with said large neutron inelastic scattering cross section and away from said neutron source for further slowing the neutron energy from said neutron source, a reflector material means mounted relative to said moderator material means in such a manner to

define with said moderator material means a chamber, gas tube means for confining an active gaseous medium, said tube means being transparent to photons and mounted in said chamber and having ends that project outside said chamber, means for defining a resonant cavity including cavity mirrors mounted at opposite ends of said tube means, one of said cavity mirrors being partially transparent from passing an output there-



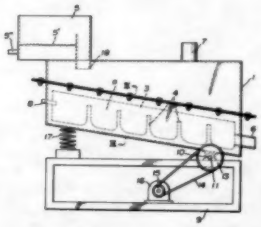
through, said tube means having an active gas mixture therein which includes XeF_2, and said chamber having a photon producing fluid therein that includes Xe, whereby when neutron energy is produced by said neutron source, energy therefrom acts on the photon producing fluid to produce photons which in turn act as a pumping means for said lasing gas mixture to cause a population inversion necessary for lasing.

4,398,295

APPARATUS FOR REGENERATING ACTIVATED CARBON

Osamu Mihara, Fujisawa, and Toyoji Kumada, Kyoto, both of Japan, assignors to Sangiken Ltd., Tokyo, Japan, by said Toyoji Kumada

Filed Jun. 3, 1981, Ser. No. 269,899
Int. Cl.³ H05B 3/60
U.S. Cl. 373—120 **4 Claims**



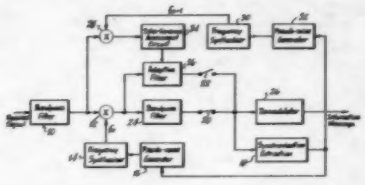
1. Apparatus for regenerating activated carbon comprising a desorption tank having a bottom providing an elongate channel-form passage sloping downwardly from an inlet end to an outlet end, means for feeding activated carbon to be regenerated to said inlet end of said passage, means for discharging regenerated activated carbon from the outlet end of said passage, elongate spaced electrode means extending along said passage, means for generating pulse voltage and supplying said pulse voltage through said electrode means to activate carbon in said passage to regenerate said activated carbon, flow intercepting means provided at spaced length intervals in said passage, and means for imparting to said passage an oscillatory swinging motion to promote flow of said activated carbon along said passage from said inlet to said outlet and to cause activated carbon particles which have become lighter by virtue of regeneration to pass preferentially over said intercepting means and thereby move toward said outlet.

4,398,296

COMMUNICATION SYSTEMS

Geoffrey F. Gott, 10 Churchill Crescent, Marple, Cheshire; Paul Doany, Flat 7, 8 Conyngham Rd., Manchester, both of England, and Majid Sepehri, Slotsherrensvej 71A, 2720 Vanlose, Denmark

Filed Mar. 4, 1981, Ser. No. 240,481
Claims priority, application United Kingdom, Mar. 8, 1980, 8007929
Int. Cl.³ H04K 1/10; H04B 1/10
U.S. Cl. 375—1 **4 Claims**



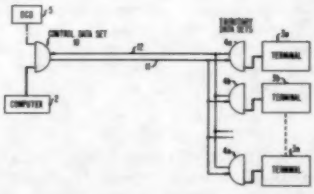
1. A receiver for a radio communications system in which first and second signals relating to message information are sequentially transmitted at different frequencies to said receiver, said receiver receiving and detecting said first and second signals in sequence and further including an interference assessment circuit for monitoring during reception and detection of said first signal at least one frequency band including said second signal and to estimate the levels of any interfering signals in said at least one band and an adaptive filter connected to said interference assessment circuit whereby said circuit controls the response of said filter, and wherein said adaptive filter receives said first and second signals in sequence and to attenuates interfering signals in a frequency band including the first signal in accordance with the interference signal levels estimated by said interference assessment circuit.

4,398,297

DATA SET DIAGNOSTIC SYSTEM

Jong-Yeong H. Hwang, Fremont, Calif.; Stevan J. Thayer, Freehold, and Bonnie A. Zimmer, Howell, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 10, 1980, Ser. No. 196,157
Int. Cl.³ H03K 13/32
U.S. Cl. 375—7 **30 Claims**



1. A first data set comprising

means for receiving a stream of input data,

means for generating an outgoing telephone voiceband data signal representing said received input data and for transmitting said outgoing signal to at least a second data set over an outgoing voiceband telephone channel,

means for receiving diagnostic signals transmitted to said first data set from a diagnostic signal source, ones of said diagnostic signals being intended for said first data set and others of said diagnostic signals being intended for said second data set, and

message switching means for determining in response to reception of an individual one of said others of said diag-

nostic signals whether said second data set is then able to accept a diagnostic signal and for transmitting said individual diagnostic signal to said second data set if the latter is so able.

4,398,298

COMMUNICATION SYSTEM HAVING STATIONS CAPABLE OF DETECTING ANOTHER STATION'S SIMULTANEOUS INITIATION OF TRANSMISSION

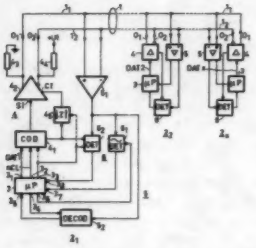
Johannes A. M. Van Egmond; Johannes Klein, and Engbert Tienkamp, all of Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,396

Claims priority, application Netherlands, Oct. 2, 1980, 8005458

Int. Cl.³ H04B *3/50*

U.S. Cl. 375—7 **15 Claims**



1. A communication system having a connecting line and stations connected thereto for transmitting and receiving information, each station comprising a processor, a transmitting stage and a receiving stage, the processor in each station having free access to the connecting line via the transmitting stage, and each station including a detector for switching off the transmitting station upon detection of the presence of another station requesting and having, respectively, substantially simultaneous access to the connecting line, characterized in that at a station which requests or has access to the connecting line in which station the transmitting stage and the receiving stage are both connected to the connecting line, an output impedance of the transmitting stage, when it supplies a predetermined logic value, is temporarily increased by impedance increasing means to at least the order of magnitude of the characteristic impedance of the connecting line, the detector, which is coupled to an output of the receiving stage, producing a detection signal which switches off the transmitting station when, during the increase in impedance, the receiving stage receives a logic value which is different from said predetermined logic value.

4,398,299

DATA SET NETWORK DIAGNOSTIC SYSTEM

Donald W. Darling, Metuchen; Thomas M. Dennis, Ocean Township, Monmouth County; Stevan J. Thayer, Freehold, and Bonnie A. Zimmer, Howell, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

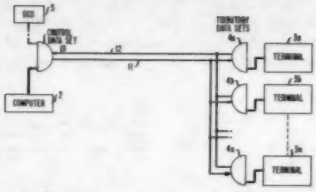
Filed Oct. 10, 1980, Ser. No. 196,160

Int. Cl.³ H04B *1/38*

U.S. Cl. 375—8 **23 Claims**

1. A first data set adapted to be connected to at least a second data set via a communication link, said first data set including means **(20, 30)** for transmitting data signals to said second data set over said link and for receiving data signals from said second data set over said link and upstream diagnostic means **(40, 510, 520, 1001, 1007)** for transmitting over said link texts identifying predetermined tests to be initiated by said second data set,

characterized by maintenance mode means **(30, 40, 1001, 1002, 1004, 1011)** for initiating at least a first predeter-



mined test in response to maintenance mode texts received over said link identifying said at least first test.

4,398,300

METHOD AND APPARATUS FOR CASSETTE IDENTIFICATION BY OPERATING CHARACTERISTICS

Stephane M. d'Alayer de Costemore d'Arc, and David J. Lockey, both of Brussels, Belgium, assignors to Staar S. A., Belgium

Division of Ser. No. 953,211, Oct. 20, 1978. This application Feb. 6, 1981, Ser. No. 232,405

Claims priority, application France, Dec. 9, 1977, 77 37210

Int. Cl.³ B65H *59/38, 77/00;* **H02P** *5/46, 7/68*

U.S. Cl. 377—18 **19 Claims**

1. A method for automatically identifying and designating that a cassette in a tape transport apparatus is of one type or of another known type, said types of cassettes having two reels carrying tape, said apparatus having drive means for the tape, and dedicated memory means storing, for each of a plurality of known types of cassettes, a set of corresponding identifier constants, said method comprising:

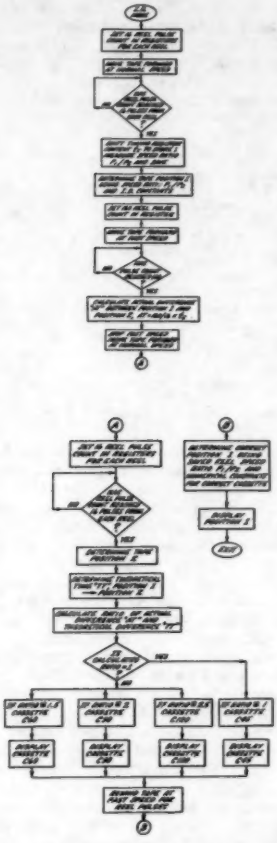
moving the tape of a cassette at fixed tape speeds by said drive means;

generating signals representing the velocities of both reels during said tape movement;

utilizing said signals for calculating values based on velocities of both said reels representative of the cassette in the apparatus;

utilizing said calculated values to determine which set of

constants stored in memory identify the type of cassette in the apparatus; and



designating that a cassette in the apparatus is one known type or another known type utilizing said determined set of identifier constants.

4,398,301

MULTIPLE PREAMPLIFIERS WITH INTERVENING OVERFLOW CELL FOR CHARGE COUPLED IMAGING DEVICES

Rudolph H. Dyck, Palo Alto, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Sep. 11, 1980, Ser. No. 186,108

Int. Cl.³ G11C *19/28*; H01L *29/78*; H03K *3/353*

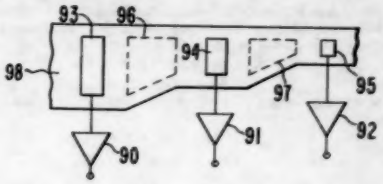
U.S. Cl. 377—60 **16 Claims**

1. Apparatus for amplifying output signals comprising electrical charge in a serial output register in a charge coupled device, the apparatus comprising:

first amplifier means for amplifying the output signals when they are supplied at a first location of the output register;

at least one second amplifier means for amplifying the output signals when they are supplied to at least one location in the output register other than the first location; and

signal limiting means disposed between the first location and at least one location other than the first location for limiting the output signals to a preselected amount after the output signals pass the first location.



4,398,302

X-RAY DIAGNOSTIC SYSTEM COMPRISING A RADIOGRAPHIC UNIT WITH AN X-RAY TUBE WHICH CAN EMIT A FAN-SHAPED RADIATION BEAM

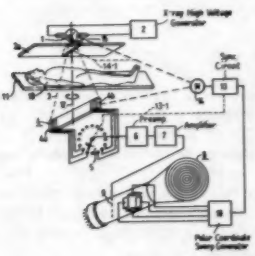
Manfred Pfeiler, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,697

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951857

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—146 **7 Claims**



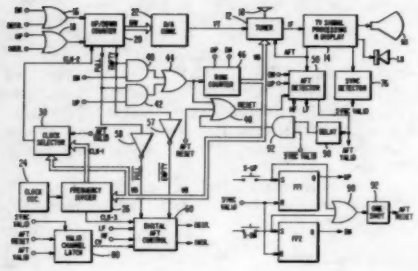
1. An x-ray diagnostic system comprising a radiographic unit with an x-ray source which emits a fan-shaped radiation beam; a support for a radiography subject a radiation detector for reception of the radiation emerging from the radiography subject, said detector supplying electric output signals corresponding to the received radiation profile; scanning means for producing a relative scanning movement between the support for the radiography subject and the radiation beam; and a measured value processing and display unit for receiving the detector output signals, and for determining and reproducing an x-ray shadow image corresponding to the scanning movement, said scanning means producing a rotational scanning movement about an axis (12), which passes through the focus of the x-ray tube (1) and the radiation detector (4), the measured value processing and display unit being operable for effecting a polar coordinate display wherein a number of concentric image point circles are recorded, each of which is allocated to a specific detector location of the radiation detector (4) and is modulated in its intensity corresponding to the output signal of the radiation detector (4) at this detector location, and means (13) coupled with said scanning means and with said processing and display unit for synchronization of the recording operation with the rotational movement, so that the circles are completely recorded when a scanning movement is terminated.

4,398,303

SIGNAL-SEEKING TUNING SYSTEM WITH AUTOMATIC BANDSWITCHING FOR A TELEVISION RECEIVER

Danny Chin, Plainsboro; John G. N. Henderson, Princeton, and Robert J. Maturo, Bricktown, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1981, Ser. No. 326,173
Int. Cl.³ H04B 1/26; H03J 7/28
U.S. Cl. 455—168 14 Claims



14. A signal-seeking tuning system for scanning a plurality of radio frequency (RF) signal bands, each of which bands includes a plurality of channels in which RF signals may be present, for selecting present ones of said RF signals, which tuning system comprises:

tuning means, responsive to a tuning signal and to one of a plurality of band signals, for selecting and heterodyning a present one of said RF signals to produce an IF signal having a nominal frequency;

signal processing means receiving said IF signals, and including means for applying a control signal to said tuning means to fine tune said IF signal to said nominal frequency;

a source of clock signals;

means for selectively developing a scan signal;

digital counter means for generating a binary word having minimum and maximum values, said binary word changing in value in a predetermined sense in response to said clock signal and said scan signal being applied to said counter means, said binary word changing cyclically between said minimum and said maximum values;

converting means coupled to said counter means for developing said tuning signal responsive to said binary word;

register means for developing said band signals in a predetermined sequence; and

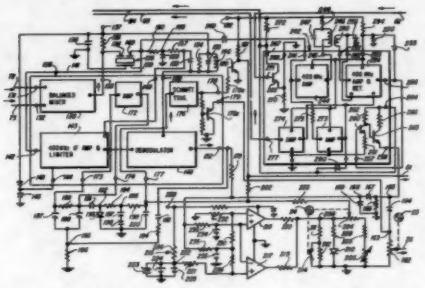
first means coupling said counter means to said register means for causing said register means to develop the next band signal in the order of said sequence when said binary word changes to reach a predetermined one of said minimum and maximum values.

4,398,304

SCANNING RADIO RECEIVER INCLUDING DETECTOR CIRCUIT FOR AM AND FM RECEPTION

George H. Fathauer, and Wayne Holst, both of Mesa, Ariz., assignors to Masco Corporation, Taylor, Mich.

Continuation of Ser. No. 34,593, Apr. 30, 1979, abandoned. This application Aug. 7, 1981, Ser. No. 290,924
Int. Cl.³ H03J 7/18
U.S. Cl. 455—168 3 Claims



1. A scanning radio receiver for receiving signals in frequency ranges including an aircraft band extending from about 118 to about 136 MHz and designated for AM operation and at least one public service band in a neighboring frequency range designated for FM operation, comprising: RF input means for receiving signals in the channels of both of said bands, tuning and frequency converting means coupled to said RF input means for converting received signals in any channel of either band into a converted signal having a frequency composition centered on a fixed IF frequency, channel selection means for controlling said tuning and frequency converting means, IF amplifier means tuned to said fixed IF frequency for amplifying said received and converted signals, detector means coupled to IF amplifier means, and audio amplifier means coupled to said detector means, said detector means including an AM demodulator for producing a first demodulated signal in response to converted and amplified signals which are amplitude modulated, and a FM demodulator for producing a second demodulated signal in response to converted and amplified signals which are frequency modulated, mode control means controlled by said channel selection means to operate in an AM mode for obtaining amplification by said audio amplifier means of only said first demodulated signal from said AM demodulator when a channel in said aircraft band is selected and to operate in am FM mode for obtaining amplification of only said second demodulated signal from said FM demodulator when a channel in a public service band designated for FM operation is selected, said FM demodulator being also operative to develop noise components at frequencies of on the order of 8 KHz in the absence of a carrier component of said converted and amplified signal at said IF frequency, squelch means including means for detecting said noise components which are produced by said FM demodulator at said frequencies of on the order of 8 KHz, and inhibiting means responsive to detection of said noise components for inhibiting amplification of any audio signal by said audio amplifier means, said FM demodulator being operative during both said AM and FM modes of operation of said mode control means in developing said noise components in the absence of a carrier component and for detection of said noise components by said squelch means to inhibit amplification of any audio signal by said amplifier means.

DESIGN PATENTS

GRANTED AUG. 9, 1983

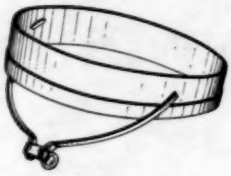
ERRATA

For CLASS	See PATENT NO.
D024–057	270,018

DESIGNS

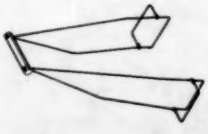
AUGUST 9, 1983

270,014
COMBINED HEADBAND AND NOSEPIECE OR SIMILAR ARTICLE
Geri Lutzker, 5 Saxony Dr., Oakhurst, N.J. 07755
Filed Feb. 2, 1981, Ser. No. 230,659
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—230

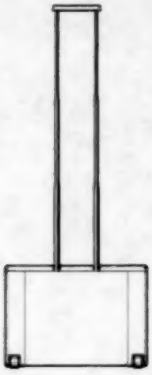


270,015
SHOE
Alfred D. Radford, Langport, England, assignor to Clarks Limited, England
Filed Apr. 22, 1981, Ser. No. 256,394
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—313

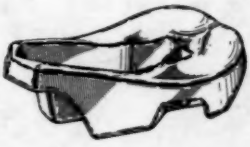
270,016
TYPEWRITER CARRIER OR SIMILAR ARTICLE
Bobby L. Allen, 1003 Cedar Trail, Cedar Hill, Tex. 75104
Filed Jan. 19, 1981, Ser. No. 226,477
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1



270,017
ROLLER CATALOG CASE
Dennis A. DiDonna, 435 Mola Ave., Fort Lauderdale, Fla. 33301
Filed Nov. 16, 1981, Ser. No. 321,454
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—76



270,018
BEDPAN
Elizabeth B. Knight, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Apr. 2, 1981, Ser. No. 250,185
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—57

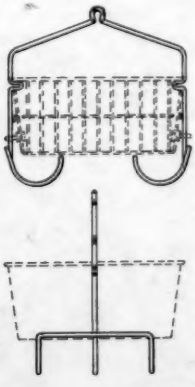


270,019
CRIB
Merlin A. Brunner, New London; Harvey J. Draheim, Weyauwega, and Michael J. Schaffer, New London, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Feb. 25, 1981, Ser. No. 238,243
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—16

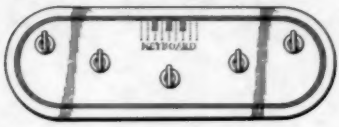
270,020
UPHOLSTERED CHAIR
Fritz Drabert, Marienstrasse 37, D-4950 Minden, Fed. Rep. of Germany
Filed Aug. 11, 1980, Ser. No. 176,934
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 6AR 21/80
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

270,021
CHAIR
Mike T. Claman, 475 Park Ave., New York, N.Y. 10022
Filed Feb. 20, 1981, Ser. No. 236,315
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57

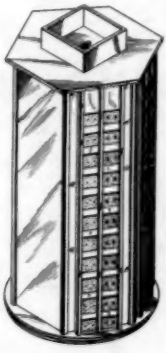
270,022
COMBINED SUSPENDED SUPPORT FOR STORAGE RECEPTACLE AND HOOKS THEREFOR
Junius T. Moore, Charleston, W. Va., assignor to The Moore Company, Inc., Charleston, W. Va.
Filed Feb. 2, 1981, Ser. No. 230,642
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—113



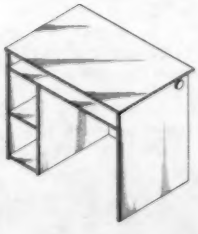
270,023
WALL MOUNTED RACK OR THE LIKE
Scott R. Sheldon, P.O. Box 3988, 1155 Trancas St., Napa, Calif. 94558
Filed Jun. 1, 1981, Ser. No. 268,883
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



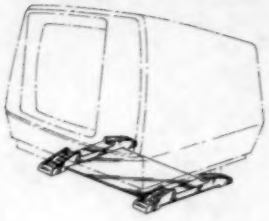
270,024
JEWELRY DISPLAY STAND
Andrew G. Strasser, Carlstadt, N.J., assignor to General Mills Products Corporation, Minneapolis, Minn.
Filed Mar. 30, 1981, Ser. No. 228,456
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—146



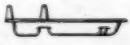
270,025
TABLE FOR ARTISTS OR THE LIKE
Thomas Koves, 645 N. Cherokee Ave., Los Angeles, Calif. 90004
Filed Apr. 30, 1981, Ser. No. 258,942
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—156



270,026
TILT BASE SUPPORT FOR CRT TERMINAL OR THE LIKE
Leonard G. Whitford, Wakefield, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jun. 29, 1981, Ser. No. 278,286
Term of patent 14 years
Int. Cl. D6—*06*; D14—*02*
U.S. Cl. D6—194

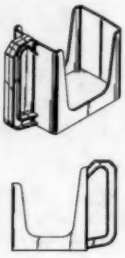


270,027
TACO SERVING TRAY
E. Stuart Fox, 1730 Pendrell St., #102, Vancouver, B. C., Canada (V66 3A3)
Filed Sep. 8, 1981, Ser. No. 299,661
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—38

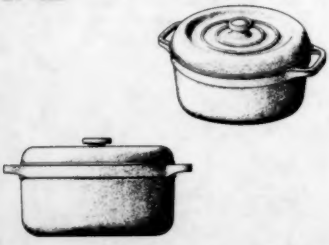


270,028
DISPENSER FOR POWDERY, PASTE-LIKE, SEMI-FLUID, OR FLUID PRODUCTS, SUCH AS SWEETENERS
Jean Vernin, Le Mee sur Seine, France, assignor to Societe d'Etudes et de Recherches Chimiques-Serc, Brussels, Belgium
Filed Nov. 10, 1980, Ser. No. 205,689
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—52

270,029
CARTON HOLDER
Donald A. McLean, Vancouver, Canada, assignor to Sun-Rype Products Ltd., Kelowna, Canada
Filed Mar. 23, 1981, Ser. No. 246,683
Claims priority, application Canada, Mar. 10, 1981, 10-03-81-6
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—70



270,030
COOKING VESSEL
Benoit Catry, Bondues, France, assignor to Founderies Franco-Belges, Merville, France
Filed Jul. 17, 1981, Ser. No. 284,315
Claims priority, application France, Jan. 20, 1981, 810-180
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—360

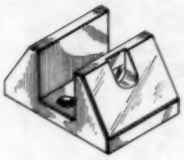


270,031
COMBINED CABLE CHANNEL CUTTING TOOL AND REMOVABLE CABLE GUIDE FOR FIREWALL LEAD-IN
Bengt E. Legerius, Nyköping, and Hans W. Siebert, Oxelösund, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Sep. 5, 1980, Ser. No. 184,230
Claims priority, application Sweden, Mar. 14, 1980, 8000053
Term of patent 14 years
Int. Cl. D8—*05*; D13—*3*
U.S. Cl. D8—14

270,032
BLADE ATTACHMENT FOR A PNEUMATIC TOOL OR THE LIKE
Charles W. Mayo, Rte. 3, Box #30, Longview, Tex. 75603
Filed Sep. 2, 1980, Ser. No. 183,769
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—70

270,033
LUGGAGE HANDLE
Bela G. Szabo, Carnegie, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.
Filed Jul. 24, 1981, Ser. No. 286,521
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—306

270,034
SHELF BRACKET
John S. Shepard, Ft. Collins, Colo., assignor to Sisu, Inc., Ft. Collins, Colo.
Filed Mar. 16, 1981, Ser. No. 243,881
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—381



270,035
UTILITY STRAP HOLDER
Horst Pudwill, Continental Eng. Prod. Co. Ltd. 311 J. Hotung Hse, Hankow Rd., Kowloon, Hong Kong
Filed Jun. 18, 1979, Ser. No. 49,658
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

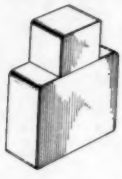
270,036
FRUIT BAG OR SIMILAR ARTICLE
Carmelito De Jesus, 233 Ridgewood Ave., Holly Hill, Fla. 32017
Filed Sep. 22, 1980, Ser. No. 189,697
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—305

270,037
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,261
The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

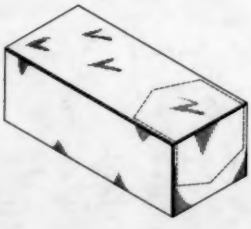
270,038
COMBINED BOTTLE AND CAP
John Lipscombe, London, England, assignor to General Foods Limited, Banbury, England
Filed Apr. 6, 1981, Ser. No. 251,332
Claims priority, application United Kingdom, Oct. 31, 1980, 997340
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

270,039
BOTTLE
John Lipscombe, London, England, assignor to General Foods Limited, Banbury, England
Filed Nov. 7, 1980, Ser. No. 204,895
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—393

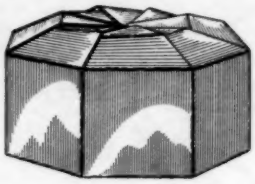
270,040
BOTTLE
Jose M. Perez Casasa y Perez de Guzman, Madrid, Spain, assignor to Federico Bonet, S. A., San Sebastian de los Reyes, Spain
Division of Ser. No. 922,165, Jul. 5, 1978. This application Jul. 30, 1980, Ser. No. 173,903
Claims priority, application Spain, Jan. 4, 1978, 91.273-A-B-C
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—413



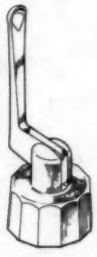
270,041
PACKAGING CONTAINER
George A. Vestal, West Redding, Conn., assignor to Union Carbide Corporation, Danbury, Conn.
Continuation-in-part of Ser. No. 891,942, Mar. 30, 1978. This application Nov. 3, 1980, Ser. No. 203,441
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D9—416



270,042
CARTON
John Fisher, Sterling Heights, Mich., assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed May 11, 1981, Ser. No. 262,010
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—430



270,043
COMBINED BOTTLE CAP AND SPOON
Ronald L. Horsley, 2692 Valleyhill Dr., Acworth, Ga. 30101
Continuation-in-part of Ser. No. 914,913, Jun. 12, 1978. This application Aug. 9, 1979, Ser. No. 65,192
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—436



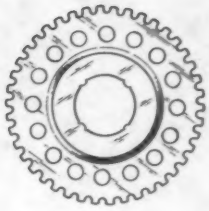
270,044
COMBINED BOTTLE CAP AND SPOON
Ronald L. Horsley, 1805 E. 14th St., San Leandro, Calif. 94577
Continuation-in-part of Ser. No. 914,913, Jun. 12, 1978. This application Oct. 24, 1979, Ser. No. 65,193
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—436

270,045
FINGER RING
Adam H. Chaumont, 438 Main St., Liberty, Tex. 77575
Filed Apr. 24, 1981, Ser. No. 257,173
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—36

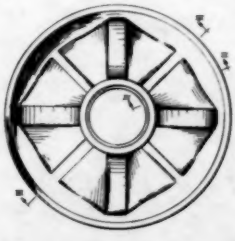
270,046
ADVERTISEMENT DISPLAY THAUMATROPE
Ivan J. Burkheimer, 481 S. Shore Dr., Clear Lake, Iowa 50428
Filed Oct. 10, 1980, Ser. No. 196,062
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79

270,047
MOTORCYCLE
Tetsuro Kataoka, Kawagoe, and Yutaka Kawasaki, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 7, 1980, Ser. No. 195,061
Claims priority, application Japan, Apr. 15, 1980, 55-14884
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

270,048
BICYCLE REAR CLUSTER GEAR WITH BUILT-IN SPACER
Robert A. Bytheway, 4611 Whitwood La., San Jose, Calif. 95130
Filed Jun. 15, 1981, Ser. No. 273,489
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—124

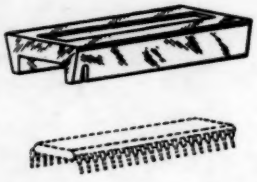


270,049
WHEEL CENTER
Donald F. Morgan, 133 E. Central, Zeeland, Mich. 49464
Filed Dec. 3, 1980, Ser. No. 212,693
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—204



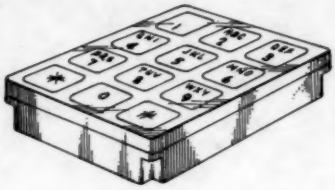
270,050
SPOKED VEHICLE WHEEL
Ronald D. Retzlaff, Anaheim, Calif., assignor to Tru-Spoke, Inc., Anaheim, Calif.
Filed Mar. 27, 1981, Ser. No. 248,525
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

270,051
INTEGRATED-CIRCUIT MODULE CARRIER
Bruce M. Smith, 11 Meadowbrook Rd., Dover, Mass. 02030
Filed Nov. 28, 1980, Ser. No. 211,461
Term of patent 14 years
Int. Cl. D13—*03;* D9—*99*
U.S. Cl. D13—99



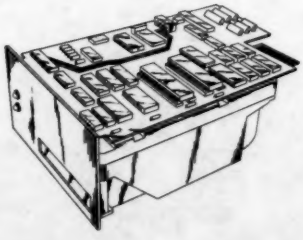
270,052
COMBINED SPEAKER CABINET AND BASE
Roger R. Weiman, 9020 Rose St., Bellflower, Calif. 90706
Filed Mar. 3, 1981, Ser. No. 240,184
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

270,053
POCKET TELEPHONE DIALER
Warren E. Bosch, Beverly, N.J., assignor to Product Dynamics, Ltd., Levittown, Pa.
Filed Jun. 2, 1981, Ser. No. 269,219
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



270,054
DEMOUNTABLE ANTENNA
Helmut Spycher, Klosterstrasse 40, CH-5430 Wettingen, Switzerland
Division of Ser. No. 190,554, Sep. 24, 1980. This application Dec. 11, 1981, Ser. No. 329,699
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—56

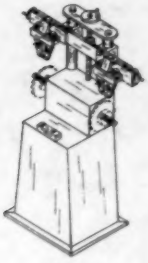
270,055
COMBINED DISC AND TAPE DRIVE
Samuel N. Irwin; Otto R. Butsch; Francis Lum, all of Ann Arbor, and Juan F. Velazquez, Saline, all of Mich., assignors to Irwin International, Inc., Ann Arbor, Mich.
Filed Sep. 8, 1980, Ser. No. 184,788
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—109



270,056
SKIRT FOR AGRICULTURAL MACHINES FOR MOVING FODDER
Pierre Kaetzel, Saverne, France, assignor to Belrecolt S.A., Marmoutier, France
Filed Apr. 24, 1980, Ser. No. 143,295
Claims priority, application France, Oct. 24, 1979, 369
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—10

270,057
SNOWPLOW
Tetsuo Nakamura, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 12, 1980, Ser. No. 210,511
Claims priority, application Japan, May 15, 1980, 55-19082
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D15—12

270,058
DISC BRAKE LATHE
R. Warren Aldridge, Jr., 10022 Nadina Dr., Huntsville, Ala. 35803
Filed Jul. 23, 1981, Ser. No. 286,292
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—130



270,059
COMBINED TOOL HOLDER AND CUTTING INSERTS THEREFOR
Larry C. Wilkins, Floyd County, Ind., assignor to Electromechanical Research Laboratories, Inc., New Albany, Ind.
Filed Sep. 2, 1980, Ser. No. 182,994
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139

270,060

HOLDER FOR INSERTING ELASTIC MATERIAL INTO COVERS

Conny Hedenberg, Slädvägen 10, Bankeryd, Sweden (560 23)

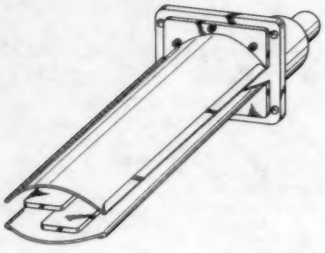
Filed Sep. 15, 1980, Ser. No. 187,185

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 42MR16

Term of patent 14 years

Int. Cl. D15—*99*

U.S. Cl. D15—199



270,061

PICTURE VIEWER

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

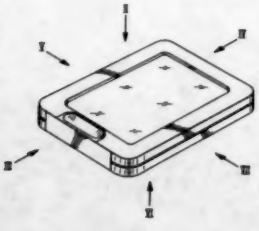
Filed May 6, 1981, Ser. No. 261,024

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, URA 1152/80

Term of patent 14 years

Int. Cl. D16—*99*

U.S. Cl. D16—11



270,062

PICTURE VIEWER

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

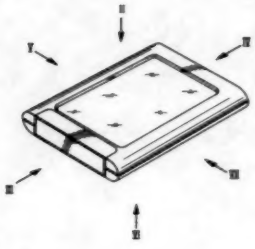
Filed May 6, 1981, Ser. No. 261,025

Claims priority, application Switzerland, Nov. 8, 1980, URA 1152/80

Term of patent 14 years

Int. Cl. D16—*99*

U.S. Cl. D16—11



270,063

PICTURE VIEWER

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

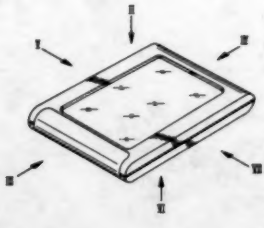
Filed May 6, 1981, Ser. No. 261,026

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, URA 1152/80

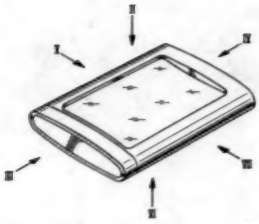
Term of patent 14 years

Int. Cl. D16—*99*

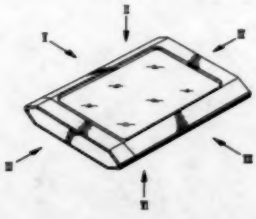
U.S. Cl. D16—11



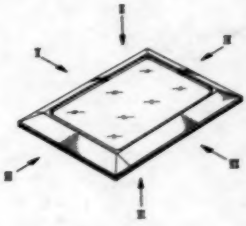
270,064
PICTURE VIEWER
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed May 6, 1981, Ser. No. 261,027
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, URA 1152/80
Term of patent 14 years
Int. Cl. D16—99
U.S. Cl. D16—11



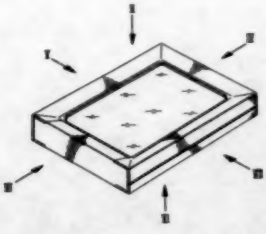
270,065
PICTURE VIEWER
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed May 6, 1981, Ser. No. 261,272
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, URA 1152/80
Term of patent 14 years
Int. Cl. D16—99
U.S. Cl. D16—11



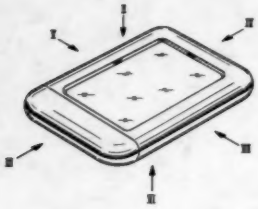
270,066
PICTURE VIEWER
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed May 6, 1981, Ser. No. 261,273
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, URA 1152/80
Term of patent 14 years
Int. Cl. D16—99
U.S. Cl. D16—11



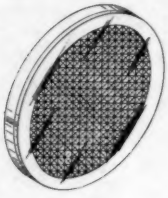
270,067
PICTURE VIEWER
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed May 6, 1981, Ser. No. 261,274
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, URA 1152/80
Term of patent 14 years
Int. Cl. D16—99
U.S. Cl. D16—11



270,068
PICTURE VIEWER
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed May 6, 1981, Ser. No. 261,275
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, URA 1152/80
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—11



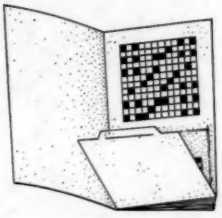
270,069
INCIDENT LIGHT FILTER FOR CAMERAS
George A. Wallace, 13695 Uvas Rd., Morgan Hill, Calif. 95037
Filed Mar. 16, 1981, Ser. No. 243,725
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—38



270,070
TYPEWRITER
Bruce A. Claxton, Coral Springs, Fla., and John E. Jolliffe, Manlius, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Jul. 15, 1981, Ser. No. 283,577
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1

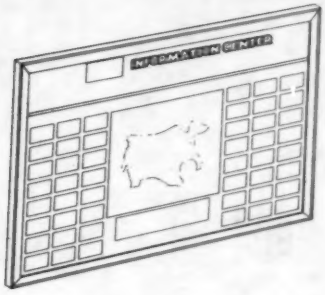
270,071
TOP, FRONT AND SIDE FACES OF A TEXT KEYBOARD OR SIMILAR ARTICLE
Jens Reese, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Sep. 24, 1980, Ser. No. 190,553
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 12121
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—12

270,072
PUZZLE BOOKLET
Aitan I. Tobias, Shop L12, Roselands, Wiley Park, New South Wales, 2195, Australia
Filed Oct. 6, 1980, Ser. No. 194,401
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26

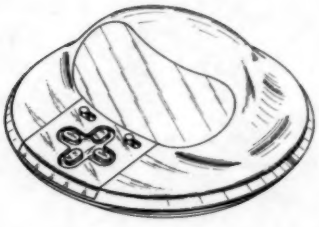


270,073
DEMONSTRATOR FOR INDICATING THE EFFECT OF ADDITIVE IN ENGINE OIL AND THE LIKE
Clinton H. Morey, Mesa, Ariz., assignor to Dolores E. Stead, Federal Way, Wash.
Filed Jun. 12, 1981, Ser. No. 273,060
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62

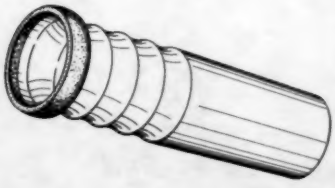
270,074
INFORMATION CENTER DISPLAY
Frank E. Read, 9203 Spring Hollow, Austin, Tex. 78750
Filed Jul. 9, 1981, Ser. No. 281,697
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—42



270,075
ELECTRONIC GAME HOUSING
Akio Tsuyuki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan
Filed Aug. 20, 1981, Ser. No. 294,611
Claims priority, application Japan, May 7, 1981, 56-19579
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



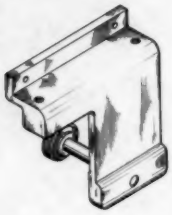
270,076
THROWING TOY
Randall D. Jeter, 1232 Hollywood, Dallas, Tex. 75208, assignor to Randall D. Jeter, Dallas, Tex.
Filed May 5, 1980, Ser. No. 146,503
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—82



270,077
MOLDED GAME RACKET
Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187
Filed Nov. 17, 1980, Ser. No. 207,382
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212

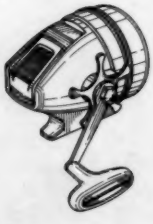
270,078
CARTRIDGE CASE DEFLECTOR
Harold E. Buffum, 1061W-400S, Kokomo, Ind. 46902
Filed Apr. 10, 1981, Ser. No. 253,023
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7

270,079
RIFLE TELESCOPE MOUNT
Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109
Filed Sep. 17, 1981, Ser. No. 303,149
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7

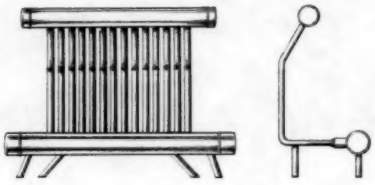


270,080
FISHING POLE HOLDER OR THE LIKE
Wilson A. Culp, Box 107, What Cheer, Iowa 50268
Filed Jan. 14, 1981, Ser. No. 225,127
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—13

270,081
FISHING REEL
Robert W. Fee, Wichita, and Richard J. Robbins, Derby, both of Kans., assignors to Brunswick Corporation, Skokie, Ill.
Filed Jul. 16, 1981, Ser. No. 284,071
The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



270,082
WATER CIRCULATING FIREPLACE GRATE
Mark R. Cleer, and Daniel L. Cleer, both of Kane, Pa., assignors to Lamont Licensing Corporation, Kane, Pa.
Filed Mar. 6, 1981, Ser. No. 241,426
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



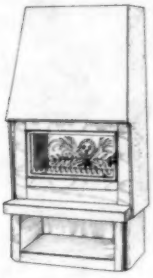
270,083
FIREPLACE
Jean Blum, Obernai, France, assignor to Supra Fabrique d'Appareils de Chauffage et de Cuisine S.A., Obernai, France
Filed Sep. 8, 1981, Ser. No. 300,268
Claims priority, application France, Mar. 9, 1981, 81 0852
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94

270,084

FIREPLACE

Jean Blum, Obernai, France, assignor to Supra Fabrique d'Appareils de Chauffage et de Cusine S.A., Obernai, France

Filed Sep. 8, 1981, Ser. No. 300,269
Claims priority, application France, Mar. 9, 1981, 81 0852
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



270,085

STOVE HAVING FINNED SURFACE

Thorvald T. V. Wawle, Vanstad 5, Lövestad, Sweden (S-270 30)

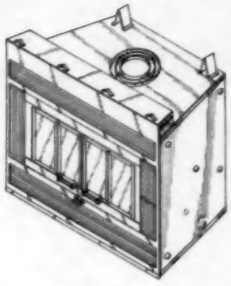
Filed Sep. 16, 1980, Ser. No. 187,658
Claims priority, application Sweden, Mar. 24, 1980, 800589; Jul. 16, 1980, 801410
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

270,086

FIREPLACE OR SIMILAR ARTICLE

Terry G. Schoeff, Andrews, Ind., assignor to American Standard Inc., New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,737
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

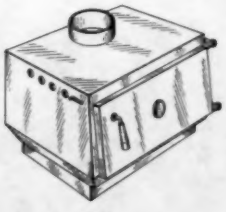


270,087

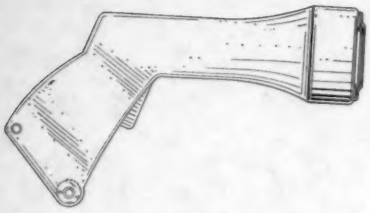
EXTERNAL OVEN FOR A WOOD-BURNING STOVE

Keith Yarwood, College Place, Wash., assignor to Woodcutters Manufacturing, Inc., Walla Walla, Wash.

Filed Dec. 12, 1980, Ser. No. 215,566
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127

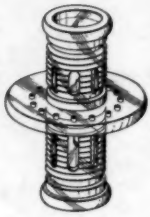


270,088
PORTABLE SMOKE DISSIPATION FAN
Robert J. Hepfler, Reno, Nev., assignor to Islay Investments, Santa Barbara, Calif.
Filed Jan. 14, 1980, Ser. No. 111,834
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



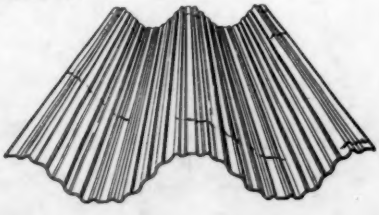
270,089
PUMP CASSETTE FOR AN IV PUMP APPARATUS
John L. Vcelka, Zion, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed May 4, 1981, Ser. No. 260,133
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—8

270,090
PROSTHESIS IMPLANT TUBULAR CONNECTOR
John V. Jennings, Richmond-on-Thames, England, assignor to Dunlop Limited, London, England
Filed Jul. 30, 1980, Ser. No. 173,749
Claims priority, application United Kingdom, Feb. 29, 1980, 993875
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—53

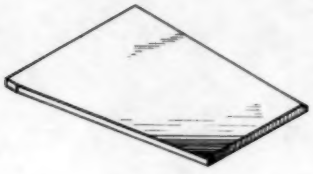


270,091
COVER FOR COLOSTOMY OR ILEOSTOMY POUCH
Patricia E. Setzer, P.O. Box 206, High Shoals, N.C. 28077
Filed Dec. 5, 1980, Ser. No. 213,306
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—58

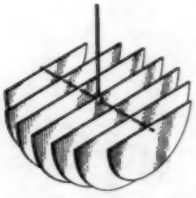
270,092
CORRUGATED METAL PANEL
Maurice Lacasse, 1191 Chemin Industriel, Bernieres, Cite Levis, Quebec. GOS 1CO, Canada
Filed Apr. 9, 1980, Ser. No. 138,748
Claims priority, application Canada, Feb. 14, 1980, 14-02080-1
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—75



270,093
TUNDISH LINER BOARD
Richard A. Lacjak, Brecksville, and John A. Keitch, Akron, both of Ohio, assignors to Foseco Trading A.G., Chur, Switzerland
Filed Aug. 16, 1979, Ser. No. 67,531
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80

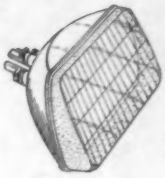


270,094
DECORATIVE SLAT ASSEMBLY FOR A SUSPENDED CEILING OR THE LIKE
Jacques G. L. Thual, Paris, France, assignor to Hunter Douglas International N.V., Willemstad-Curacao, Netherlands Antilles
Filed Apr. 22, 1981, Ser. No. 256,610
Claims priority, application France, Oct. 23, 1980, 803288
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—89



270,095
NIGHT LIGHT
Gerald C. Palmer, Eagan, Minn., assignor to Saxon Industries, Inc., New York, N.Y.
Filed Apr. 14, 1981, Ser. No. 254,156
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—26

270,096
VEHICLE LIGHT
Garo M. Ziver, Pine City, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 3, 1981, Ser. No. 289,263
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28



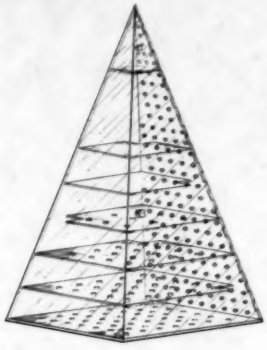
270,097
COMBINED CIGARETTE SNUFFER AND HOLDER
Joseph M. Minkevitch, 26 Folan Ave., Norwood, Mass. 02062
Filed Nov. 6, 1980, Ser. No. 204,498
Term of patent 14 years
Int. Cl. D27—*3*
U.S. Cl. D27—9

270,098
CIGARETTE LIGHTER
Laura S. Eisenberg, Mount Vernon, N.Y., assignor to Seymour C. Yuter, Briarcliff Manor, N.Y.
Division of Ser. No. 105,716, Jul. 2, 1979, Pat. No. Des. 264,999.
This application Aug. 21, 1981, Ser. No. 295,131
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—41

270,099
PHARMACEUTICAL TABLET
Carl J. Short, Manhatten Beach, and Gale K. Bensussen, Los Angeles, both of Calif., assignors to P. Leiner Nutritional Products, Inc., Torrance, Calif.
Filed Aug. 26, 1981, Ser. No. 296,456
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D28—3

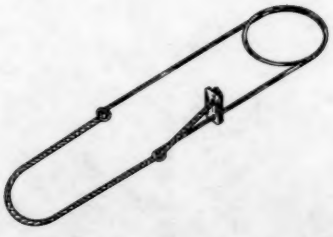
270,100
TOOTHPICK
Per H. Hjalmarsson, Bjärred, Sweden, assignor to Tubex AB, Glimakra, Sweden
Filed May 13, 1980, Ser. No. 149,398
Claims priority, application Sweden, Nov. 22, 1979, 79-2565
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D28—64

270,101
SMALL ANIMAL HABITAT
Robert O. Lovitt, 1500 Warren La., Fort Worth, Tex. 76112
Filed Feb. 2, 1981, Ser. No. 230,647
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

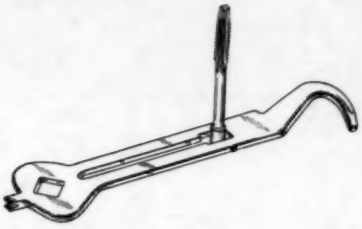


270,102
DOG STOP COLLAR
George Crenshaw, 302 N. Uhl Rd., De Soto, Tex. 75115, and Luther Case, 8335 Plainview Dr., Dallas, Tex. 75217
Filed May 29, 1981, Ser. No. 268,166
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—38

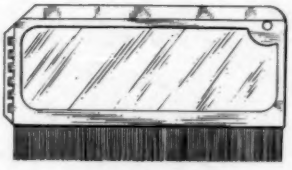
270,103
HOG HOLDER
Galen G. Radford, 220 3rd Ter., Nebraska City, Nebr. 64810
Filed Dec. 10, 1981, Ser. No. 329,180
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43



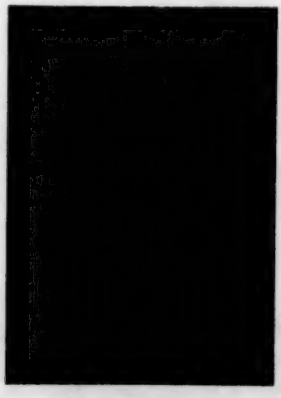
270,104
COMBINATION TOOL FOR A FARRIER
Sven H. Jensen, Olivedalsgatan 22, S-413 10 Göeborg, Sweden
Filed Dec. 11, 1980, Ser. No. 215,502
Claims priority, application Sweden, Jun. 12, 1980, 80-1196
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



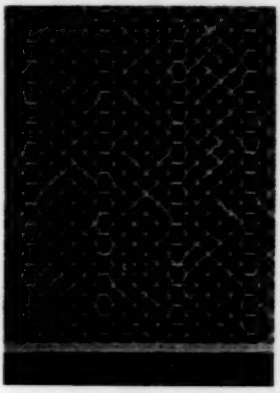
270,105
COMBINED BRUSH AND SCRAPER
Bernard A. Erickson, Rockford, Ill., assignor to Groom Industries, Inc., Rockford, Ill.
Filed Sep. 14, 1981, Ser. No. 302,178
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—42



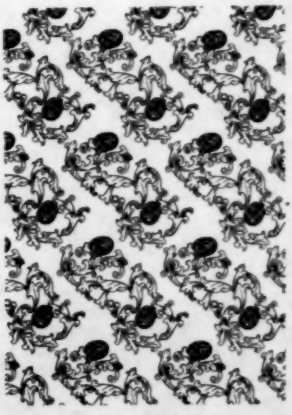
270,106
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Mar. 11, 1981, Ser. No. 242,532
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1980, 1206
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



270,107
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Mar. 11, 1981, Ser. No. 242,542
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1980, 1206
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



270,108
SHEET MATERIAL OR SIMILAR ARTICLE
Masaharu Itoh, 19-5, Higashioi 3-chome, Shinagawa-ku, Tokyo-to, Japan
Filed Nov. 12, 1980, Ser. No. 206,046
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 E



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TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF AUGUST, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See*—
Young, Hepburn S., 4,397,932, Cl. 430-81.000.

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A. Nattermann & Cie GmbH: *See*—
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A. O. Smith Harvestore Products, Inc.: *See*—
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Aaland, Kristian. Switching power pulse system. 4,398,156, Cl. 328-233.000.

AB Volvo Penta: *See*—
Borgersen, Kjell-Idar; and Brandt, Lennart H., 4,397,198, Cl. 74-378.000.

Abbott Laboratories: *See*—
Chu, Daniel T., 4,397,784, Cl. 260-245.20T.
Larkin, Mark E., 4,397,442, Cl. 251-342.000.

Abdulla, Riaz F., to Eli Lilly and Company. Synthesis of acetyl-T-alkanes. 4,398,044, Cl. 568-318.000.

Abe, Toyohiko: *See*—
Tsubaki, Kazumi; Koto, Noriaki; and Abe, Toyohiko, 4,398,006, Cl. 526-127.000.

Abell, Anne C. Utensil for cooking food by steaming. 4,397,298, Cl. 126-369.000.

Abendroth, Paul: *See*—
Greiner, Harry M.; Holl, Roland; Neberle, Klaus; and Abendroth, Paul, 4,397,236, Cl. 101-350.000.

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Behle, Gunter R., 4,397,444, Cl. 251-144.000.
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Acimovic, Simeon; Lindemann, Karl-Heinz; and Kunz, Volker G., to Elektro-Brite GmbH & Co. KG. Alkaline zinc electroplating bath with or without cyanide content. 4,397,717, Cl. 204-55.00Y.

Acker, William F., to Honeywell Inc. Signal monitor system. 4,398,218, Cl. 328-150.000.

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Derbenwick, Gary F.; Adams, James R.; Hanson, Matthew V.; and Ryden, William D., 4,397,077, Cl. 29-571.000.

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Adkins, James R., to SWS Silicones Corporation. Method for accelerating the activity of a hydrosilation catalyst. 4,398,010, Cl. 528-15.000.

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AECI Limited: *See*—
Goddard, Vaughan P.; and Le Maitre, Richard B. C., 4,397,909, Cl. 428-252.000.

AEL Microtel, Ltd.: *See*—
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Wood, Sherman L., 4,397,485, Cl. 285-111.000.

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Colin, Armand, 4,397,257, Cl. 114-304.000.

Agency of Industrial Science & Technology: *See*—
Matsuda, Kiyofumi; and Eiju, Tomoaki, 4,397,550, Cl. 356-28.500.

Agfa-Gevaert Aktiengesellschaft: *See*—
von Konig, Anita; Moll, Franz; and Oediger, Hermann, 4,397,942, Cl. 430-446.000.

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Cochran, Robert N.; and Deeba, Michel, 4,398,041, Cl. 564-479.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Watanabe, Tsukasa; Amano, Hiroyuki; and Sakakibara, Naoji, 4,397,443, Cl. 251-129.000.

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Aizawa, Masanori: *See*—
Ueno, Hiroshi; Miyamatsu, Yasunori; Aizawa, Masanori; Kaga, Yasuo; and Ishibashi, Kazuhisa, 4,397,401, Cl. 220-260.000.

Ajinomoto Co., Inc.: *See*—
Takezawa, Kenji; and Hiratani, Hajima, 4,397,840, Cl. 424-99.000.

Akagi, Kazuo: *See*—
Tanaka, Yoshiro; Moroi, Hayato; Kamatsu, Yukihiko; Akagi, Kazuo; Shitamatsu, Ryujiro; and Nishimura, Tadashi, 4,397,328, Cl. 134-76.000.

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Akashi, Goro; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Cleaning tape. 4,397,911, Cl. 428-323.000.

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Akkapeddi, Murali K.; DeBona, Bruce T.; Lai, Yu-Chin; and Prevorsek, Dusan C., to Allied Corporation. Temperature stable thermotropic poly(ester carbonate) derived from t-butylhydroquinone. 4,398,018, Cl. 528-176.000.

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Cornelissens, Emery G. P.; and Gudden, Gerardus J. W. H., 4,397,391, Cl. 206-526.000.

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Lynnes, Carman P.; Kielb, Eugene J.; Mather, Joseph M.; Albright, Larry E.; and Hoechst, Lonnie D., 4,397,371, Cl. 180-271.000.

Aldrich, Charles S., to International Business Machines Corporation. Ribbon lift and feed mechanism for a typewriter. 4,397,575, Cl. 400-208.000.

Allais, Andre; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, to Roussel Uclaf. Analgesic 4-hydroxy-3-quinolinecarboxamides. 4,397,856, Cl. 424-251.000.

Allen, Harry R., to Upjohn Company, The. Lincomycin 3-(5'-adenylate) as anesthetic. 4,397,845, Cl. 424-180.000.

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Moore, Jerry W.; and Allen, James, 4,397,425, Cl. 241-169.100.

Allen, Roland M.; and Kalocai, Andrew J., to West Company, The. Method for making molded articles. 4,397,706, Cl. 156-242.000.

Allen, Roland M.; and Kolacai, Andrew J., to West Company, The. Molded articles. 4,397,903, Cl. 428-156.000.

Allied Corporation: *See*—
Akkapeddi, Murali K.; DeBona, Bruce T.; Lai, Yu-Chin; and Prevorsek, Dusan C., 4,398,018, Cl. 528-176.000.
Marshall, Robert M.; Dardoufas, Kimon C.; and Lazarus, Stanley D., 4,397,985, Cl. 524-837.000.
Merrill, Robert G.; Lofquist, Robert A.; Weedon, Gene C.; Haylock, John C.; and Twilley, Ian C., 4,398,012, Cl. 528-84.000.
Reimschuessel, Herbert K., 4,397,979, Cl. 524-413.000.

Alliquander, Odon; Natkai, Lajos; and Ujfalusi, Elek, to Orszagos Koolaj es Gazipari Troszt. Hydraulic drilling motor with rotary internally and externally threaded members. 4,397,619, Cl. 418-48.000.

Allis-Chalmers Corporation: *See*—
Selep, Andrew; and Bhide, Yeshwant K., 4,397,657, Cl. 48-86.00R.
Spring, Donald K., 4,397,218, Cl. 91-26.000.

Allison, John P.: *See*—
Matthews, Billie J.; Allison, John P.; Woon, Paul S.; Stevens, Robert A.; and Bornslaeger, Stephan R., 4,397,644, Cl. 604-378.000.

Allison, Joseph L., to Dow Chemical Company, The. Specific-ion gas-sensing carbonate analyzer. 4,397,957, Cl. 436-133.000.

Allum, David R.: *See*—
Horncy, Thomas E.; Allum, David R.; and McBean, Rupert J. S., 4,397,583, Cl. 405-150.000.

Alonzo, George J., Jr.; and Alonzo, George J., Sr. Expandable camper body. 4,397,497, Cl. 296-26.000.

Alonzo, George J., Sr.: *See*—
Alonzo, George J., Jr.; and Alonzo, George J., Sr., 4,397,497, Cl. 296-26.000.

Alps Electric Co., Ltd.: *See*—
Kondo, Shiro; and Mizuta, Ken, 4,398,070, Cl. 200-16.00R.
Nishikawa, Teruo, 4,398,170, Cl. 338-198.000.

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Jarvis, Jack D., 4,397,581, Cl. 404-97.000.

Aluminum Company of America: *See*—
Vasudevan, Asuri K., 4,397,696, Cl. 148-11.50A.

Amano, Hiroyuki: *See*—
Watanabe, Tsukasa; Amano, Hiroyuki; and Sakakibara, Naoji, 4,397,443, Cl. 251-129.000.

Amano, Takehiro: *See*—
Takano, Seiichi; Otomo, Susumu; and Amano, Takehiro, 4,398,026, Cl. 544-133.000.

Amax Inc.: *See*—
Beckstead, Leo W.; and Queneau, Paul B., 4,397,821, Cl. 423-58.000.

American Artos Corporation: *See*—
Ruepp, Ferdinand, 4,397,103, Cl. 34-155.000.

American Can Company: *See*—
Anderson, Gerald R., 4,397,131, Cl. 53-254.000.

American Cyanamid Company: *See*—
DeVries, Vern G., 4,397,868, Cl. 424-322.000.

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AMP Incorporated: *See*—
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,397,511, Cl. 339-17.0CF.
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,397,513, Cl. 339-91.00R.
Olsson, Billy E., 4,398,069, Cl. 200-6.00R.
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Amsterdamse Ballast Bagger en Grond (Amsterdam Ballast Dredging) B.V.: *See*—
Op den Velde, Jan; Elzerman, Jan B.; and Oterdoom, Klaas, 4,397,587, Cl. 405-222.000.

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Anavil, Yodhin: *See*—
Paganini, Bruno J.; Anavil, Yodhin; Hale, William J.; and Lee, Kwang H., 4,398,257, Cl. 364-550.000.

Anderson-Cook, Inc.: *See*—
Jungesjo, Harald N., 4,397,174, Cl. 72-419.000.

Anderson, Gerald R., to American Can Company. Automatic bagging system for can ends. 4,397,131, Cl. 53-254.000.

Anderson, Gordon H. Portable vacuum object handling device. 4,397,491, Cl. 294-64.00R.

Anderson, Robert, to Storage Technology Corporation. Magnetic tape drive with adaptive servo. 4,398,227, Cl. 360-71.000.

Ando, Akitoshi, to Kyoritsu Electrical Works, Ltd. Detecting method and apparatus for permanent wave hairdressing. 4,398,183, Cl. 340-500.000.

Ando, Keikichi: *See*—
Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,397,912, Cl. 428-336.000.

Andresen, Richard P., to Bio-Tek Instruments, Inc. Photometer with microtray well position indicator. 4,397,560, Cl. 356-440.000.

Andros Analyzers Incorporated: *See*—
Passaro, Robert E., 4,398,091, Cl. 250-343.000.

Angeles, Marshall R.: *See*—
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Anheuser-Busch, Incorporated: *See*—
Stubits, Marcella C.; Teng, James; and Scallet, Barrett L., 4,397,872, Cl. 426-16.000.

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Manderla, Henry J., 4,397,441, Cl. 249-19.000.

Antos, Ronald L.; Brueggemann, Harry P.; and Grafton, David A., to Xerox Corporation. Double pass optical system for raster scanners. 4,397,521, Cl. 350-6.800.

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Franz, Klaus L., 4,397,098, Cl. 33-304.000.

Araki, Masashi; Hibi, Takuo; Kawabe, Tomofumi; and Yamahara, Takeshi, to Sumitomo Chemical Company, Limited. Production of tertiary olefins. 4,398,051, Cl. 585-640.000.

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Bakul, Dave, to Babcock & Wilcox Company, The. Method of aligning a water level indicator having a remote and a local readout display. 4,397,182, Cl. 73-293.000.

Bala, John L.; and Boswell, Charles R., to Electronics Corporation of America. Fail-safe device for electronic control circuit. 4,398,233, Cl. 361-78.000.

Baldwin, Raymond, to Metal Box Limited. Composite containers. 4,397,414, Cl. 229-5.700.

Ball, Edward T.; and White, John E. R., to AEL Microtel, Ltd. Switch mode - class B power amplifier. 4,398,159, Cl. 330-262.000.

Ballard, Geoffrey E. H., to Standard Oil Company. Explosion resistant battery cells. 4,397,919, Cl. 429-53.000.

Ballard, Paul T.: *See*—
Hill, Henry A.; and Ballard, Paul T., 4,397,558, Cl. 356-354.000.

Ballas, Helen S.: *See*—
Wheeler, Herbert O., 4,397,051, Cl. 5-84.000.

Ballast-Nedam Groep N.V.: *See*—
Op den Velde, Jan; Elzerman, Jan B.; and Oterdoom, Klaas, 4,397,587, Cl. 405-222.000.

Ballou, Edmund W.; Voelz, Frederick L.; and Collins, Thomas A., to Atlantic Richfield Company. Apparatus for detecting level changes in distance. 4,397,183, Cl. 73-293.000.

Bally Manufacturing Corporation: *See*—
Pasierb, John J., Jr.; and Ghosh, Atish, 4,398,189, Cl. 340-721.000.

Baluteau, Jean-Michel, to Societe d'Optique, Precision Electronique et Mecanique. Objective with several fields. 4,397,530, Cl. 350-541.000.

Bancohio National Bank: *See*—
Laughbaum, Edward E., 4,397,674, Cl. 71-9.000.

Bania, Joseph: *See*—
Schell, Frank M.; DiMonico, George S.; and Bania, Joseph, 4,398,097, Cl. 307-64.000.

Bankert, Neil R.; Heyer, Steven R.; and Viele, Lawrence, Jr., to International Business Machines Corporation. Method and apparatus for testing xerographic developer mix. 4,397,184, Cl. 73-432.00R.

Bansevichus, Ramutis J.; Gapshis, Vladas-Algis A.; Kasparaitis, Albinas J.; Perfilov, Viktor V.; and Ragauskas, Alvidas J., to Experimentalny Naucho-Issledovatelsky Institut Metallorezhuschikh*. Piezoelectric resonant contact sensor. 4,397,188, Cl. 73-651.000.

Barber-Colman Company: *See*—
Maxson, Dale E., 4,397,223, Cl. 98-40.00D.

Barchuk, Vladimir I.: *See*—
Pokhodenko, Vitaly D.; Koshechko, Vyacheslav G.; Barchuk, Vladimir I.; and Isagulov, Kim S., 4,397,922, Cl. 429-105.000.

Barjhoux, Yves M.; Saint Jalmes, Herve; and Taquin, Jacques R., to Thomson - CSF. Electromagnetic coil system for examination of large objects by nuclear magnetic resonance and whole-body imaging machine using a system. 4,398,148, Cl. 324-307.000.

Barjhoux, Yves M.; Saint Jalmes, Herve; and Taquin, Jacques R., to Thomson - CSF. Ironless high-homogeneity magnet and its application to nuclear magnetic resonance imaging. 4,398,150, Cl. 324-319.000.

Barnes, Johnny G.; Chukras, Rudolph E.; Hurley, Patrick J.; and Lineman, Harry L., to International Business Machines Corporation. Justification of overstruck text. 4,397,572, Cl. 400-3.000.

Baron, Walter J.; and Cleaver, Laird C., to Water Services of American, Inc. Heat exchanger with improved tube cleaning element basket retaining. 4,397,349, Cl. 165-95.000.

Barr & Stroud Limited: *See*—
Neil, Iain A., 4,397,520, Cl. 350-1.400.

Barraire, Michel; Roux, Marcel; and Turolla, Jean P., to SOCAPEX. Zero insertion force connector, particularly for an integrated circuit. 4,397,512, Cl. 339-75.00M.

Barristo, Ltd.: *See*—
Van Roeyen, Harry P., 4,397,325, Cl. 132-76.400.

Bartell, Lester A.: *See*—
Gurecki, William A.; and Bartell, Lester A., 4,397,141, Cl. 57-58.590.

Barthel, Thomas C., to Medtronic, Inc. Rate and A-V delay generator for heart pacemaker. 4,397,316, Cl. 128-419.0PG.

Bartimes, George F.: *See*—
Hellmer, Ernest W.; and Bartimes, George F., 4,397,625, Cl. 425-135.000.

Barto, Robert M., Jr.: *See*—
Lopata, Ira; and Barto, Robert M., Jr., 4,397,541, Cl. 355-14.0SH.

Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, to Ciba-Geigy Corporation. Antigen derivatives and processes for their preparation. 4,397,844, Cl. 424-177.000.

Baschin, Horst: *See*—
Bohnet, Armin; and Baschin, Horst, 4,397,508, Cl. 312-312.000.

BASF Aktiengesellschaft: *See*—
Degen, Hans-Juergen; and Grychtol, Klaus, 4,397,651, Cl. 8-506.000.
Lotsch, Wolfgang; and Hilbert, Peter, 4,398,027, Cl. 544-296.000.
Wendel, Kurt; and Addicks, Guenther, 4,397,984, Cl. 524-814.000.

BASF Wyandotte Corporation: *See*—
Stolz, Theodore O.; Moore, Richard A.; and Lutz, James P., 4,397,966, Cl. 521-167.000.

Batson, Bradley L., to Veeder Industries Inc. Valve shutoff system for fuel dispensing apparatus. 4,397,405, Cl. 222-14.000.

Bauck, Randall C., to Iomega Corporation. Method of avoiding resonance in servo controlled apparatus. 4,398,228, Cl. 360-77.000.

Baudoin, Patrice, to Regie Nationale des Usines Renault. Vehicle engine control. 4,397,379, Cl. 192-0.032.

Bauer, Peter. Snap-action one-piece clamping device. 4,397,577, Cl. 402-19.000.

Baxter Travenol Laboratories, Inc.: *See*—
Groman, Ernest V.; and Cabelli, Michael D., 4,397,779, Cl. 260-112.50R.
Lamadrid, Rene, 4,397,642, Cl. 604-245.000.

Bayer Aktiengesellschaft: *See*—
Bernert, Claus-Rudiger; Kords, Christian; and Redeker, Detmar, 4,398,024, Cl. 536-85.000.
Goyert, Wilhelm; Fleige, Wolfgang; Hoppe, Hans-Georg; and Wagner, Hans, 4,397,974, Cl. 524-143.000.
Hocker, Jurgen; and Dhein, Rolf, 4,397,971, Cl. 524-40.000.
Kuhle, Engelbert; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,397,869, Cl. 424-324.000.
Skoupi, Dieter; and Weber, Gerd, 4,397,407, Cl. 222-132.000.

Baylor Company: *See*—
Zuch, Howard W., 4,398,111, Cl. 310-93.000.

Bazlen, Dieter; Bock, Dietrich W.; Getzlaff, Klaus J.; Hajdu, Johann; and Painke, Helmut, to International Business Machines Corporation. Control device for directing execution of forced operations in a data processing system. 4,398,247, Cl. 364-200.000.

BBC Brown, Boveri & Company, Limited: *See*—
Keller, Jakob J., 4,397,613, Cl. 417-64.000.

Beall, George H., to Corning Glass Works. Method of making alkali metal, calcium fluorosilicate glass-ceramic articles. 4,397,670, Cl. 65-33.000.

Beasom, James D., to Harris Corporation. Kelvin-connected buried zener voltage reference circuit. 4,398,142, Cl. 323-226.000.

Beatrice, G. Joseph: *See*—
Runck, Alan H.; and Beatrice, G. Joseph, 4,397,392, Cl. 206-528.000.

Beaucamp, Klaus: *See*—
von Hoerschelmann, Detlef; Seidel, Hans; Berger, Gerhard; Masuth, Armin; Beaucamp, Klaus; and Gruber, Wolfgang, 4,397,952, Cl. 435-190.000.

Beauchamp, Lynn I.: *See*—
Kraske, Leroy E.; Werner, Gregory K.; and Beauchamp, Lynn I., 4,397,603, Cl. 414-695.500.

Beauducel, Claude: *See*—
Cretin, Jacques; and Beauducel, Claude, 4,398,271, Cl. 367-20.000.

Beaumont, Gregory J.; Godawski, Theodore J.; McShane, James P.; and Parker, James J., to Zenith Radio Corporation. High frequency computer terminal power supply with isolation. 4,398,133, Cl. 315-411.000.

Beaver, Jeffrey L.; Kennedy, Robert J., Jr.; Smith, Kendall, II; and Brown, Gregory N. Material distribution device. 4,397,423, Cl. 239-684.000.

Beckman Instruments, Inc.: *See*—
Kampf, Richard S., 4,397,386, Cl. 198-491.000.

Beckstead, Leo W.; and Queneau, Paul B., to Amax Inc. Precipitation of synthetic scheelite. 4,397,821, Cl. 423-58.000.

Becton Dickinson and Company: *See*—
Burns, James A., 4,397,318, Cl. 128-763.000.

Behle, Gunter R., to ACF Industries, Incorporated. Tank car bottom outlet valve having combination ring and valve seat. 4,397,444, Cl. 251-144.000.

Belart, Juan, to ITT Industries, Inc. Brake booster for automotive vehicles. 4,397,219, Cl. 91-376.00R.

Bell & Howell Company: *See*—
De Kraker, Larry, 4,397,372, Cl. 180-277.000.

Bell Telephone Laboratories, Incorporated: *See*—
Canniff, Ronald J., 4,398,284, Cl. 370-56.000.
Darling, Donald W.; Dennis, Thomas M.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,398,299, Cl. 375-8.000.
Donnelly, Vincent M.; Flamm, Daniel L.; and Ibbotson, Dale E., 4,397,711, Cl. 156-643.000.
Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,398,297, Cl. 375-7.000.
Moran, Joseph M., 4,397,724, Cl. 204-192.00E.
Spencer, Douglas A., 4,398,287, Cl. 370-85.000.

Belleville, Marc: *See*—
Atwell, William D., Jr.; and Belleville, Marc, 4,398,155, Cl. 328-73.000.

Belrecolt S.A.: *See*—
Wattron, Albert, 4,397,135, Cl. 56-377.000.

Ben-Porat, Avi, to Avco Corporation. Fail-safe, anti-icing system for aircraft engines. 4,397,431, Cl. 244-53.00B.

Bender, Dean R.; Hearst, John E.; and Rapoport, Henry, to University of California, The Regents of the. Coumarin derivatives and method for synthesizing 5'-methyl psoralens therefrom. 4,398,031, Cl. 549-282.000.

Bendix Corporation, The: *See*—
Bickos, John G.; Warren, Gilbert G.; and Piscitelli, R. Amelia, 4,397,086, Cl. 29-876.000.
Koren, David H.; Kirby, Allan B.; and Gould, Donald H., 4,397,516, Cl. 339-177.00R.

Benedict, Douglas M., to United States of America, Air Force. Universal timing array. 4,398,085, Cl. 377-20.000.

Benjamin, Mary Lou; Dobbs, Robert J.; and Shaffer, Mary E., to GTE Products Corporation. Process for producing refractory powder. 4,397,889, Cl. 427-221.000.

Benoit-Gonin, Roger; Berger, Jean-Luc; Coutures, Jean-Louis; Forster, Daniel; and Picquendar, Jean-Edgar, to Thomson-CSF. Switched-capacitance amplifier, a switched-capacitance filter and a charge-transfer filter comprising an amplifier of this type. 4,398,099, Cl. 307-246.000.

Benson, Melvin E.; and McCaskey, Harold O., to Westinghouse Electric Corp. Light weight high temperature polyester laminates useful as lubricating rub strips. 4,397,910, Cl. 428-283.000.

Berger, Gerhard: *See—*
von Hoerschelmann, Detlef; Seidel, Hans; Berger, Gerhard; Masuth, Armin; Beaucamp, Klaus; and Gruber, Wolfgang. 4,397,952, Cl. 435-190.000.

Berger, Jean-Luc: *See—*
Benoit-Gonin, Roger; Berger, Jean-Luc; Coutures, Jean-Louis; Forster, Daniel; and Picquendar, Jean-Edgar. 4,398,099, Cl. 307-246.000.

Berger, Richard F.: *See—*
Pardes, Greg; Berger, Richard F.; and Gerber, Bernard R., 4,397,132, Cl. 53-471.000.

Bernert, Claus-Rudiger; Kords, Christian; and Redeker, Detmar, to Wolff Walsrode Aktiengesellschaft; and Bayer Aktiengesellschaft. Process for the purification of cellulose and starch ethers. 4,398,024, Cl. 536-85.000.

Bernhardt, Lutz, to Computer Gesellschaft Konstanz mbH. Method and circuit arrangement for formation of features for automatic character recognition. 4,398,177, Cl. 382-18.000.

Berry, Eudore A.: *See—*
Wilson, Peter C.; and Berry, Eudore A., 4,397,638, Cl. 494-40.000.

Berry, James B.; and Spector, George. Frame. 4,397,323, Cl. 132-11.00R.

Bertram, James L.; and Woo, Edmund P., to Dow Chemical Co., The. Epoxy resins from hydroxy benzamides. 4,398,002, Cl. 525-523.000.

Bertus, Brent J.: *See—*
Roberts, John S.; Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne. 4,397,767, Cl. 252-431.00P.

Bettoni, Cesare: *See—*
Bettoni, Guido; and Bettoni, Cesare, 4,397,065, Cl. 19-80.00R.

Bettoni, Guido; and Bettoni, Cesare. Self regulated apparatus for feeding carding machines. 4,397,065, Cl. 19-80.00R.

Bhide, Yeshwant K.: *See—*
Selep, Andrew; and Bhide, Yeshwant K., 4,397,657, Cl. 48-86.00R.

Biagini, Stefano: *See—*
Rio, Arturo; Guala, Gennaro; and Biagini, Stefano, 4,397,263, Cl. 118-643.000.

Biarnesen, Terry L.: *See—*
Rumage, Donald V.; and Biarnesen, Terry L., 4,397,374, Cl. 182-129.000.

BICC Limited: *See—*
Childs, John B.; and Fairey, Norman R., 4,397,622, Cl. 419-67.000.
Lyon, Robert C.; and Fearns, Peter, 4,397,436, Cl. 248-68.00R.

BICC Public Limited Company: *See—*
Parr, David T., 4,397,522, Cl. 350-96.210.

Bicker, Uwe: *See—*
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,397,848, Cl. 424-244.000.

Bickos, John G.; Warren, Gilbert G.; and Piscitelli, R. Amelia, to Bendix Corporation, The. Method of fabricating a socket type electrical contact. 4,397,086, Cl. 29-876.000.

Bidegain, Georgy, to Embadac. Display box. 4,397,387, Cl. 206-45.230.

Biggs, Anthony J. Surgical pins and method. 4,397,634, Cl. 433-225.000.

Bindloss, William; and Zumsteg, Fredrick C., Jr., to Du Pont de Nemours, E. I., and Company. Process for generating a latent magnetic image. 4,397,929, Cl. 430-39.000.

Bindra, Perminder S., to International Business Machines Corporation. Electrolytic cells with alkaline electrolytes containing trifluoromethylane sulfonic acid. 4,397,730, Cl. 204-252.000.

Bingham, Wallace K., to Minnesota Mining and Manufacturing Company. Coded threads and sheet material useful for making such coded threads. 4,397,142, Cl. 57-238.000.

Binnersley, Edwin K., to Du Pont de Nemours, E. I., and Company. Apparatus for applying finish to a yarn. 4,397,164, Cl. 68-200.000.

Bio-Tek Instruments, Inc.: *See—*
Andresen, Richard P., 4,397,560, Cl. 356-440.000.

Bird, Donald: *See—*
Collishaw, Peter S.; and Bird, Donald, 4,397,754, Cl. 252-91.000.

Bishop, Richard E. Handle access flap. 4,397,416, Cl. 229-52.0BC.

Bitzer-Kuhlmaschinenbau GmbH & Co. KG: *See—*
Stenzel, Adalbert, 4,397,618, Cl. 418-23.000.

Black & Decker Inc.: *See—*
Jinkins, Danny R.; Lessig, William R., III; and Canatella, Timothy J., 4,397,060, Cl. 15-377.000.
Overy, Colin; and Langenberg, Anthony J., 4,397,120, Cl. 51-170.0MT.

Blake, David R., to Ciba-Geigy Corporation. Treatment of arthritic complaints. 4,397,867, Cl. 424-320.000.

Blanc, Jean-Marc: *See—*
Pfister, Hans; Knaisch, Otto; and Blanc, Jean-Marc, 4,397,728, Cl. 204-243.00M.

Blanchette, Henry J., to Plastican, Incorporated. Plastic containers and covers. 4,397,404, Cl. 220-306.000.

Blendax-Werke R. Schneider GmbH & Co.: *See—*
Raaf, Helmut; Harth, Helmut; and Wagner, Helmar R., 4,397,837, Cl. 424-51.000.

Blessings Corp.: *See—*
Daniels, Robert C.; and Daniels, Florence S., 4,397,646, Cl. 604-381.000.

Block, Robert S.: *See—*
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., 4,398,216, Cl. 358-121.000.

Bloomer, Ivan, to Schweitzer Industrial Corporation. Apparatus for removing solvents from air. 4,397,662, Cl. 55-228.000.

Bloomfield, Philip E.: *See—*
Kulischenko, Walter; and Bloomfield, Philip E., 4,398,173, Cl. 340-52.00R.

Bock, Dietrich W.: *See—*
Bazlen, Dieter; Bock, Dietrich W.; Getzlaff, Klaus J.; Hajdu, Johann; and Painke, Helmut, 4,398,247, Cl. 364-200.000.

Boden, Richard M.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Alkyl-4-cyclooctenyl carbonates and uses thereof in augmenting or enhancing the aroma of perfume compositions, colognes and perfumed articles. 4,397,789, Cl. 260-463.000.

Boden, Richard M.: *See—*
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,398,038, Cl. 560-103.000.

Boehme, Werner R., to Fats and Proteins Research Foundation, Inc. Foliar antitranspirant. 4,397,681, Cl. 71-106.000.

Boehringer Mannheim GmbH: *See—*
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,397,848, Cl. 424-244.000.
von Hoerschelmann, Detlef; Seidel, Hans; Berger, Gerhard; Masuth, Armin; Beaucamp, Klaus; and Gruber, Wolfgang, 4,397,952, Cl. 435-190.000.

Boeing Company, The: *See—*
Brick, Rowan O.; and King, Charles H., 4,398,234, Cl. 361-218.000.
Buus, Henning, 4,398,242, Cl. 364-183.000.
Resetar, Michael C., 4,397,432, Cl. 244-118.600.

Boerner, Dietmar: *See—*
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,397,848, Cl. 424-244.000.

Boesten, Johannes K. A.: *See—*
Haisma, Jan; Boesten, Johannes K. A.; and deVroome, Henderikus, 4,397,669, Cl. 65-30.140.

Bohner, Beat; Rempfler, Hermann; and Schurter, Rolf, to Ciba-Geigy Corporation. Herbicidally active oxime esters of halogenated α-[4-(pyridyl-2'-oxy)phenoxy]-propionic acids. 4,397,680, Cl. 71-094.000.

Bohnet, Armin; and Baschin, Horst. Built-in baking and roasting oven. 4,397,508, Cl. 312-312.000.

Bolyard, Patricia A.: *See—*
Bolyard, Philip B.; and Bolyard, Patricia A., 4,397,476, Cl. 280-656.000.

Bolyard, Philip B.; and Bolyard, Patricia A. Collapsible trailer. 4,397,476, Cl. 280-656.000.

Bonis, Marc. Remote supply circuit for analog two-wire connection. 4,398,143, Cl. 323-370.000.

Bonitz, Jorg: *See—*
Rohde, Siegfried; Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Schramm, Herbert; and Schmidt, Gunther, 4,397,176, Cl. 73-35.000.

Boonstra, Alexander H.; and Mutsaers, Cornelis A. H. A., to U.S. Philips Corporation. Method of preparing resistance material and resistor bodies produced therewith. 4,397,774, Cl. 252-518.000.

Booth, Raymond H.; Monahan, Jack J.; and Schneider, Fred J., to Western Electric Co., Inc. Centering articles. 4,397,385, Cl. 198-345.000.

Bor-,Mubor-,es Cipoipari kutato Intezet: *See—*
Lorant, Ivan; Murlasits, Gyula; Wlasitsch, Gyula; Farkas, Ferenc; and Szomolanyi, Geza, 4,397,892, Cl. 427-245.000.

Borden, Inc.: *See—*
Galal, Mostafa K.; Haines, William C.; and Roberto, Beverly I., 4,397,926, Cl. 426-582.000.

Borgersen, Kjell-Idar; and Brandt, Lennart H., to AB Volvo Penta. Marine transmission assembly system. 4,397,198, Cl. 74-378.000.

Borio, Richard W.: *See—*
Mehta, Arun K.; and Borio, Richard W., 4,397,248, Cl. 110-263.000.

Boris, Alfred; Partridge, John J.; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Method of treatment. 4,397,847, Cl. 424-236.000.

Bornslaeger, Stephan R.: *See—*
Matthews, Billie J.; Allison, John P.; Woon, Paul S.; Stevens, Robert A.; and Bornslaeger, Stephan R., 4,397,644, Cl. 604-378.000.

Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, to Boehringer Mannheim GmbH. N-Substituted aziridine-2-carboxylic acid immunostimulant derivatives. 4,397,848, Cl. 424-244.000.

Boswell, Charles R.: *See—*
Bala, John L.; and Boswell, Charles R., 4,398,233, Cl. 361-78.000.

Bottoms, Clifford C. System for flame spray coating of a rod. 4,397,893, Cl. 427-319.000.

Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, to ITT Industries, Inc. Fastening device for a switch. 4,398,073, Cl. 200-295.000.

Bouchard, Andre C.: *See—*
Hall, Harold H., Jr.; and Bouchard, Andre C., 4,397,803, Cl. 264-272.150.

Boutni, Omar M.; and Liu, Ping Y., to General Electric Company. Compositions. 4,397,982, Cl. 524-493.000.

Bowers, Kenneth R., Jr. Vortex gas cooler. 4,397,154, Cl. 62-5.000.

BP Chemicals Limited: *See—*
Johnstone, Alexander, 4,397,762, Cl. 252-429.00B.

Brabant, Henri. Foldable panel or door. 4,397,347, Cl. 160-231.00R.

Brack, Frank B.: *See—*
Brack, Frank T.; and Brack, Frank B., 4,397,203, Cl. 83-156.000.

Brack, Frank T.; and Brack, Frank B. Towel cutting machine. 4,397,203, Cl. 83-156.000.

Bramow, Scott B.; Crum, Louis J.; and Riebe, William J., to Johnson Controls, Inc. Fluid signal square root extractor. 4,398,087, Cl. 235-200.0PF.

Brand, Leonard J.: *See—*
Nadelson, Jeffrey; and Brand, Leonard J., 4,397,850, Cl. 424-248.400.

Brandenstein, Manfred: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,397,802, Cl. 264-219.000.

Brandes, Wilhelm: *See*—
Kuhle, Engelbert; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,397,869, Cl. 424-324.000.

Brandt, Lennart H.: *See*—
Borgersen, Kjell-Idar; and Brandt, Lennart H., 4,397,198, Cl. 74-378.000.

Branker, H. Earle. Coin operated meter. 4,397,382, Cl. 194-61.000.

Braun, William V.: *See*—
Moore, Morris A.; and Braun, William V., 4,398,192, Cl. 340-825.440.

Brenik, Wenzel; and Riedel, Dieter, to Drabert Sohne. Apparatus for treating materials in the form of continuous lengths. 4,397,158, Cl. 62-380.000.

Brennen, Michael B.; Gyugyi, Laszlo; and Stacey, Eric J., to Westinghouse Electric Corp. Static VAR generators. 4,398,141, Cl. 323-211.000.

Bressickello, Lindy J.: *See*—
Moore, Henry J., Jr.; and Bressickello, Lindy J., 4,397,296, Cl. 126-360.00A.

Brick, Rowan O.; and King, Charles H., to Boeing Company, The. Flush precipitation static discharger system for aircraft. 4,398,234, Cl. 361-218.000.

Bridgestone Tire Co., Ltd.: *See*—
Kataoka, Nobuyuki; Saito, Tasuku; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,398,000, Cl. 525-437.000.

Brierley, John M.; and Scott, Melvin, to Lever Brothers Company. Stable liquid detergent suspensions. 4,397,755, Cl. 252-113.000.

Bright, Samuel C.; and Postlethwaite, Dennis, to Lever Brothers Company. Bleaching compositions having quarternary ammonium activators. 4,397,757, Cl. 252-186.410.

British Hovercraft Corp. Ltd.: *See*—
Eldridge, Michael W.; and Dadswell, John E., 4,397,366, Cl. 180-116.000.

British Nuclear Fuels Ltd.: *See*—
Butler, Gregg G.; Gillies, George M.; Heal, Thomas J.; and Littlechild, James E., 4,397,824, Cl. 423-260.000.

Brock, Phillip J.: *See*—
Dawson, Daniel J.; and Brock, Phillip J., 4,397,997, Cl. 525-384.000.

Brodesser, Gerd R., to Xerox Corporation. Xerographic envelope printing. 4,397,542, Cl. 355-14.00R.

Brog, Roy A. Imitation milk compositions and aqueous dispersions prepared therefrom. 4,397,927, Cl. 426-583.000.

Bronswerk B.V.: *See*—
, Kramers, Pieter, 4,397,664, Cl. 62-183.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Yamamoto, Takemi, 4,398,181, Cl. 340-365.00S.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Wollank, Gerhard, 4,398,128, Cl. 315-158.000.

Brown, Charles L. Engine intake air moisturizer. 4,397,268, Cl. 123-25.00L.

Brown, Eric; and Hancox, Neil L., to Chas. A. Blatchford & Sons Limited. Reinforced plastics artificial limb component and method for making same. 4,397,048, Cl. 3-2.000.

Brown, Gregory N.: *See*—
Beaver, Jeffrey L.; Kennedy, Robert J., Jr.; Smith, Kendall, II; and Brown, Gregory N., 4,397,423, Cl. 239-684.000.

Brown, Robert J. S.: *See*—
Thompson, Don D.; Brown, Robert J. S.; and Runge, Richard J., 4,398,273, Cl. 367-73.000.

Browne, John M.: *See*—
Silverberg, Morton; Browne, John M.; and Young, Dale W., 4,397,459, Cl. 271-94.000.

Brownscombe, Thomas F.: *See*—
De La Mare, Harold E.; and Brownscombe, Thomas F., 4,397,998, Cl. 525-420.500.

Bruce, Peter. Anchors. 4,397,256, Cl. 114-303.000.

Brueggemann, Harry P.: *See*—
Antos, Ronald L.; Brueggemann, Harry P.; and Grafton, David A., 4,397,521, Cl. 350-6.800.

Bruton, Rose L. Article handling apparatus and method for restocking store shelves. 4,397,606, Cl. 414-786.000.

Bryans Southern Instruments Ltd.: *See*—
Henderson, Kenneth J., 4,398,202, Cl. 346-29.000.

Buchanan, Stuart R.: *See*—
Klein, Carl F.; Buchanan, Stuart R.; Thoma, Paul E.; and Klimek, David L., 4,397,702, Cl. 156-153.000.

Buckeye Cellulose Corporation, The: *See*—
McAllester, Spears L., 4,397,309, Cl. 128-132.00D.

Buckleitner, Thomas H.: *See*—
Clearman, Jack F.; and Buckleitner, Thomas H., 4,397,163, Cl. 68-53.000.

Buell, Kenneth B., to Procter & Gamble Company, The. Disposable absorbent article having an improved liquid containment construction. 4,397,645, Cl. 604-380.000.

Bumgardner, Donald L., to Northern Telecom Inc. Compensator for CRT deflection yokes and the like. 4,398,166, Cl. 335-212.000.

Burdette, Lowrie W., to Xerox Corporation. Particle dispensing system. 4,397,546, Cl. 355-3.0DD.

Burge, Joseph C.: *See*—
Feldman, Paul S.; Burge, Joseph C.; Radomski, Michael A.; and Tameo, Robert P., 4,397,471, Cl. 277-27.000.

Burgin, Kermit H. Apparatus for producing and collecting a liquid extract and a dry by-product from a mash. 4,397,231, Cl. 100-117.000.

Burn, Ian: *See*—
Neirman, Stephen M.; and Burn, Ian, 4,397,886, Cl. 427-80.000.

Burnett, Willys D.: *See*—
Sheehan, Richard W.; and Burnett, Willys D., 4,397,140, Cl. 57-22.000.

Burns, James A., to Becton Dickinson and Company. Blood collector for microcollection container. 4,397,318, Cl. 128-763.000.

Burns, Michael T.: *See*—
Maddever, Wayne J.; Burns, Michael T.; and Lewis, Jennings B., 4,397,685, Cl. 75-60.000.

Burquier, Jean-Luc, to S.A. Des Etablissements Staubli. Safety valve unions. 4,397,445, Cl. 251-149.900.

Burrage, Robert H. Food-type combination utility device having hammer-like head. 4,397,087, Cl. 30-120.300.

Burton, Larry C.: *See*—
Ijaz, Lubna R.; and Burton, Larry C., 4,398,055, Cl. 136-258.000.

Busch, Gerhard; Jakob, Heinz; Jendrzejewski, Reiner; Klement, Heribert; Prohaska, Hans; Schmid, Eckhardt; and Schneider, Theodor, to ITT Industries, Inc. Windshield wiper electric drive unit. 4,398,135, Cl. 318-443.000.

Busse, Vernon E.: *See*—
Schockman, Robert L.; Busse, Vernon E.; Wissman, Terry L.; and Schoch, Daniel A., 4,397,232, Cl. 100-214.000.

Butler, Gregg G.; Gillies, George M.; Heal, Thomas J.; and Littlechild, James E., to British Nuclear Fuels Ltd. Conversion of uranium hexafluoride to oxides of uranium. 4,397,824, Cl. 423-260.000.

Buus, Henning, to Boeing Company, The. Electronic controller. 4,398,242, Cl. 364-183.000.

Bye, Richard, to Massachusetts Institute of Technology. Mixing device and method for mixing molten metals. 4,397,687, Cl. 75-68.00R.

C-I-L Inc.: *See*—
Thibault, Gilbert; and Mayotte, David C., 4,397,832, Cl. 423-474.000.

Cabelli, Michael D.: *See*—
Groman, Ernest V.; and Cabelli, Michael D., 4,397,779, Cl. 260-112.50R.

Cain, David E., to Halliburton Company. Hydraulic filter press. 4,397,177, Cl. 73-61.400.

Cairns, James A.; Woodhead, James L.; and Ramsay, John D. F., to United Kingdom Atomic Energy Authority. Method of preparing a catalyst. 4,397,770, Cl. 252-465.000.

Cairns, James A.: *See*—
Noakes, Michael L.; and Cairns, James A., 4,397,772, Cl. 252-477.00R.

Caldwell, Richard L., to Mobil Oil Corporation. Method for determining fluid saturation in a subsurface formation. 4,397,181, Cl. 73-152.000.

Calgon Carbon Corporation: *See*—
Rosene, Michael R., 4,398,046, Cl. 568-679.000.

Caligen Foam Limited: *See*—
Collishaw, Peter S.; and Bird, Donald, 4,397,754, Cl. 252-91.000.

Calkins, Dennis E.: *See*—
Green, William L.; Calkins, Dennis E.; Landers, Edward A., Jr.; and Gray, Daniel W., 4,397,582, Cl. 405-137.000.

Cambiaso, Cesar L.: *See*—
Moussebois, Claude H.; Masson, Pierre L.; Vaerman, Jean-Pierre; Limet, Joseph; and Cambiaso, Cesar L., 4,397,960, Cl. 436-512.000.

Camossi, Carlo. Device and process for the manufacture of vibration-damping and shockproof mountings incorporating at least one helically arranged metal cable and mounting thereby obtained. 4,397,069, Cl. 29-173.000.

Campbell, Kent D.; Langer, Horst G.; and Martin, Patrick H., to Dow Chemical Company, The. Process for epoxy phosphate coating resins. 4,397,970, Cl. 523-402.000.

Campisi, Carl; and Sron, Harry F., to Zenith Radio Corporation. PC Board mounting apparatus. 4,398,236, Cl. 361-419.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Malcolm, Richard E.; Assenheim, Harry M.; Emmett, Paul L.; and Chan, Richard, 4,397,555, Cl. 356-248.000.

Canadian Fram Limited: *See*—
Yew, Kwang, 4,397,380, Cl. 192-84.00C.

Canadian Patents & Dev. Limited: *See*—
Onno, Thomas, 4,397,301, Cl. 126-422.000.

Canatella, Timothy J.: *See*—
Jinkins, Danny R.; Lessig, William R., III; and Canatella, Timothy J., 4,397,060, Cl. 15-377.000.

Canniff, Ronald J., to Bell Telephone Laboratories, Incorporated. Concentrator in a subscriber loop digital carrier system. 4,398,284, Cl. 370-56.000.

Canon Kabushiki Kaisha: *See*—
Kamata, Shigeru, 4,397,528, Cl. 350-429.000.
Sakurada, Nobuaki; Date, Nobuaki; Shimizu, Masami; and Aizawa, Hiroshi, 4,397,534, Cl. 354-23.00D.
Sugata, Masao; Fukaya, Masaki; Nakagiri, Takashi; Yamagata, Takaaki; and Hirai, Yutaka, 4,397,933, Cl. 430-84.000.
Tamura, Yasuyuki, 4,397,537, Cl. 355-3.00R.

Capizzi-Gooding, Karen R.: *See*—
Fantuzzo, Joseph; and Capizzi-Gooding, Karen R., 4,397,409, Cl. 222-414.000.

Carsid Patents, N.V.: *See*—
Jacobs, Jacobus P., 4,397,420, Cl. 239-154.000.

Carl, Stewart, to Timex Corporation. Timepiece construction with a caseback removable using a credit card. 4,397,567, Cl. 368-309.000.

Carl Zeiss-Stiftung: *See—*
Muller, Gerhard, 4,397,556, Cl. 356-301.000.

Carlin Company, The: *See—*
Fisher, Leonard A., 4,397,631, Cl. 431-114.000.

Carlson, Albert W. D., to Rivercross Learning Corp. Folder for coupons. 4,397,417, Cl. 229-92.300.

Carlson, Doris F.: *See—*
Wisnosky, Jerome D.; and Carlson, Doris F., 4,397,940, Cl. 430-325.000.

Carlson, Roland W., to Technicare Corporation. Shaped detector. 4,398,092, Cl. 250-361.00R.

Carney, John L., Jr.; and Vierck, Gary L., to ACF Industries, Incorporated. Pneumatic outlet control valve. 4,397,591, Cl. 406-131.000.

Carrier Corporation: *See—*
Yarnold, Daniel J., 4,397,068, Cl. 29-157.400.

Carroll, Alexander A.; and Hannan, William F., III, to Elliott Turbomachinery Co., Inc. Oil slinger and method of mounting. 4,397,470, Cl. 277-1.000.

Carroll, Robert J.; Keller, Roger A.; Lane, E. James; and Williams, Freddie G., to Eaton Corporation. Vehicle monitor apparatus. 4,398,172, Cl. 340-38.00P.

Carson, David L. Combination guitar vibrato and pitch control. 4,397,212, Cl. 84-313.000.

Carter, Bartus, III. Method of reducing predictability in card games. 4,397,469, Cl. 273-149.00R.

Carver, Herman C., to Petroworld, Ltd. Fishing tool to retrieve cables from wells. 4,397,494, Cl. 294-86.100.

Casio Computer Co., Ltd.: *See—*
Hosono, Taiichi, 4,398,250, Cl. 364-404.000.
Ito, Hisashi, 4,398,263, Cl. 364-733.000.

Castelli, Vittorio; Hamaker, Ralph A.; and Opocensky, Willard J., to Xerox Corporation. Belt alignment system. 4,397,538, Cl. 355-3.0BE.

Castle, Thomas M.: *See—*
Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., 4,397,950, Cl. 435-125.000.

Catanzarite, Vincent O. Cathode structure and method. 4,397,083, Cl. 29-623.200.

Caterpillar Tractor Co.: *See—*
Eftefield, Larry G.; and Horton, Edward R., 4,397,173, Cl. 72-392.000.

Cazes, Roland: *See—*
Dard, Philippe; and Cazes, Roland, 4,398,079, Cl. 219-121.0EC.

CBS Inc.: *See—*
Finch, Robert A., 4,397,210, Cl. 84-1.030.

CECOR Incorporated: *See—*
Troller, Robert J., 4,397,745, Cl. 210-237.000.

Celanese Corporation: *See—*
Stuetz, Dagobert E., 4,397,321, Cl. 131-334.000.

Central Glass Company Limited: *See—*
Kanda, Yoshihumi; Morita, Isamu; Kandachi, Takayoshi; and Kiriu, Kazuyuki, 4,397,259, Cl. 118-323.000.
Mishima, Michiharu; Yamamoto, Yuji; Makita, Kensuke; Sakka, Sumio; and Kamiya, Kanichi, 4,397,666, Cl. 65-18.300.
Morimoto, Hiroshi; Inoue, Hajime; and Ueda, Kazuo, 4,397,667, Cl. 65-30.130.

Centre National de la Recherche Scientifique (CNRS): *See—*
Gagnepain, Jean-Jacques; Hauden, Daniel; Coquerel, Roger; and Pegeot, Claude, 4,398,115, Cl. 310-313.00A.

Centre National d'Etudes des Telecommunications: *See—*
Mathieu, Michel; Charbonnel, Pierre; and Pacaud, Jean-Claude, 4,398,290, Cl. 370-94.000.

Champion International Corporation: *See—*
Lillibridge, Harold R.; and Sullivan, John, 4,397,262, Cl. 118-620.000.

Chan, Michael L.: *See—*
Joynt, Gerald E.; and Chan, Michael L., 4,397,498, Cl. 296-182.000.

Chan, Richard: *See—*
Malcolm, Richard E.; Assenheim, Harry M.; Emmett, Paul L.; and Chan, Richard, 4,397,555, Cl. 356-248.000.

Chandra, Nisha: *See—*
Weisfeldt, Myron L.; Tsitlik, Joshua E.; and Chandra, Nisha, 4,397,306, Cl. 128-28.000.

Chapleo, Christopher B.; and Myers, Peter L., to Reckitt & Colman Products Limited. Benzodioxanyl imidazoline compounds, compositions and use. 4,397,860, Cl. 424-273.00R.

Chapman, Michael C., to Illinois Tool Works Inc. Selectively mountable article holding fastener. 4,397,438, Cl. 248-229.000.

Charbonnel, Pierre: *See—*
Mathieu, Michel; Charbonnel, Pierre; and Pacaud, Jean-Claude, 4,398,290, Cl. 370-94.000.

Charcon Tunnels Limited: *See—*
Horncy, Thomas E.; Allum, David R.; and McBean, Rupert J. S., 4,397,583, Cl. 405-150.000.

Chas. A. Blatchford & Sons Limited: *See—*
Brown, Eric; and Hancox, Neil L., 4,397,048, Cl. 3-2.000.

Charles, Joseph P.: *See—*
Khachaturian, Jon E.; and Charles, Joseph P., 4,397,493, Cl. 294-81.00R.

Chauvin, Yves: *See—*
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,398,049, Cl. 585-512.000.

Chen, Wu-Chi. Process for treating chlorine-containing organic compounds. 4,397,829, Cl. 423-443.000.

Cheng, Ying Y.; Grant, Barbara D.; Pederson, Lester A.; and Willson, Carlton G., to International Business Machines Corporation. Terpolymer resist compositions. 4,398,001, Cl. 525-502.000.

Chernikov, Jury L.: *See—*
Danilevich, Yanush B.; Ostreiko, Vladimir N.; Chernikov, Jury L.; and Chubraeva, Lidia I., 4,398,108, Cl. 310-54.000.

Chernosky, Allen A. Vacuum cleaner attachment for rotary lawnmowers. 4,397,059, Cl. 15-328.000.

Chesebro, Robert E., Jr.; and Heinig, Richard H., to Wigwam Mills, Inc. Sock with a compressive support foot. 4,397,161, Cl. 66-178.00A.

Chevron Research Company: *See—*
Dimpfl, William L., 4,397,823, Cl. 423-210.000.
Kray, Louis R., 4,397,737, Cl. 208-48.0AA.
Madan, Arun, 4,398,054, Cl. 136-255.000.
Shippey, Michael A., 4,397,749, Cl. 252-42.700.
Thompson, Don D.; Brown, Robert J. S.; and Runge, Richard J., 4,398,273, Cl. 367-73.000.

Chi, Chang V.; and Leonida, Andrei, to Energy Research Corporation. Fuel cell pack with internal connection of fuel cells. 4,397,917, Cl. 429-26.000.

Chi, Chang V., to Energy Research Corporation. Fuel cell stack shorting method and apparatus. 4,397,918, Cl. 429-26.000.

Chiba, Haruo; Sekiguchi, Yukichi; and Ohkubo, Takashi, to Sanwa Seiki Manufacturing Co., Ltd. Fuel economy running indicator. 4,397,178, Cl. 73-114.000.

Chibnik, Sheldon, to Mobil Oil Corporation. N-Hydroxyalkyl pyrrolidinone esters as detergent compositions and lubricants and fuel containing same. 4,397,750, Cl. 252-51.50A.

Chiklis, Charles K.; and Schuler, Alan N., to Polaroid Corporation. Process for preparing polymeric oximes and compositions containing same. 4,397,996, Cl. 525-380.000.

Childs, John B.; and Fairey, Norman R., to BICC Limited. Method of and apparatus for continuous friction-actuated extrusion. 4,397,622, Cl. 419-67.000.

Chin, Danny; Henderson, John G. N.; and Maturo, Robert J., to RCA Corporation. Signal-seeking tuning system with automatic band-switching for a television receiver. 4,398,303, Cl. 455-168.000.

Chodorow, Marvin; and Symons, Robert S., to Varian Associates, Inc. Mode suppression means for gyrotron cavities. 4,398,121, Cl. 315-4.000.

Chotiros, Pornchai, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Within-pulse doppler scanning. 4,398,274, Cl. 367-90.000.

Christensen, Burton G.; Hannah, John; Leanza, William J.; and Shih, David H., to Merck & Co., Inc. N- And carboxyl derivatives of thienamycin. 4,397,861, Cl. 424-274.000.

Christiansen, Robert W.; and Westberg, Walter M., to Minnesota Mining and Manufacturing Company. Conductive elastomeric fabric and body strap. 4,398,277, Cl. 361-220.000.

Chrysler Corporation: *See—*
Liba, Joseph; and Rafferty, Michael, 4,397,333, Cl. 137-574.000.

Chu, Daniel T., to Abbott Laboratories. Inhibitors of transpeptidase. 4,397,784, Cl. 260-245.20T.

Chu, Paul; and Klingensmith, James B., to Fairchild Camera & Instrument Corporation. Interruptible microprogram sequencing unit and microprogrammed apparatus utilizing same. 4,398,244, Cl. 364-200.000.

Chu, Pochen, to Mobil Oil Corporation. Silico-crystal method of preparing same and catalytic conversion therewith. 4,397,827, Cl. 423-326.000.

Chubraeva, Lidia I.: *See—*
Danilevich, Yanush B.; Ostreiko, Vladimir N.; Chernikov, Jury L.; and Chubraeva, Lidia I., 4,398,108, Cl. 310-54.000.

Chugai Ro Kogyo Co., Ltd.: *See—*
Kinoshita, Keizo; Murakami, Koji; and Ohta, Hitoshi, 4,397,451, Cl. 266-252.000.

Chukran, Rudolph E.: *See—*
Barnes, Johnny G.; Chukran, Rudolph E.; Hurley, Patrick J.; and Lineman, Harry L., 4,397,572, Cl. 400-3.000.

Chumbley, James F.; Corke, Michael W.; and Yount, Jo, to Warm Window, Inc. Insulated window shade. 4,397,346, Cl. 160-84.00R.

Church, Kenneth: *See—*
Strong, William A.; and Church, Kenneth, 4,397,561, Cl. 366-21.000.

Ciba-Geigy Corporation: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,397,844, Cl. 424-177.000.
Blake, David R., 4,397,867, Cl. 424-320.000.
Bohner, Beat; Rempfler, Hermann; and Schurter, Rolf, 4,397,680, Cl. 71-094.000.
Dingwall, John G.; and Tuck, Brian, 4,398,033, Cl. 549-329.000.
Green, George E.; Irving, Edward; and Stark, Bernard P., 4,398,014, Cl. 528-89.000.
Neumann, Konrad, 4,397,652, Cl. 8-524.000.

Ciccarelli, Roger N.; and Hoffend, Thomas R., to Xerox Corporation. Positively charged developer compositions containing quaternized vinyl pyridine polymers. 4,397,935, Cl. 430-110.000.

Circuit Chemistry Corporation: *See—*
Czaja, James J., 4,397,753, Cl. 252-79.300.

Citizen Watch Co. Ltd.: *See—*
Kawahara, Hisashi, 4,397,564, Cl. 368-204.000.
Shirasu, Shinichi, 4,397,562, Cl. 368-63.000.
Waki, Masahiko; Yamagata, Hisao; Murata, Toshio; Takeuchi, Fumio; and Matsumoto, Masataka, 4,397,568, Cl. 368-321.000.

Clarion Co., Ltd.: *See*—
Minagawa, Shoichi; and Okamoto, Takeshi, 4,398,114, Cl. 310-313.00R.
Osaka, Hiroshi, 4,398,215, Cl. 358-120.000.
Clark Equipment Company: *See*—
Lewis, Stephen A. M., 4,397,495, Cl. 294-88.000.
Lynnes, Carman P.; Kielb, Eugene J.; Mather, Joseph M.; Albright, Larry E.; and Hoechst, Lonnie D., 4,397,371, Cl. 180-271.000.
Clark, Gary T.; and Weaver, Max A., to Eastman Kodak Company. Azo dyes from 2-amino-3-nitro-5-acylthiophene. 4,397,781, Cl. 260-152.000.
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., to AMP Incorporated. Cartridge holder and connector system. 4,397,511, Cl. 339-17.0CF.
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., to AMP Incorporated. Cartridge holder and connector system. 4,397,513, Cl. 339-91.00R.
Clearman, Jack F.; and Buckleitner, Thomas H., to Whirlpool Corporation. Reduced energy consumption automatic washers. 4,397,163, Cl. 68-53.000.
Cleaver, Laird C.: *See*—
Baron, Walter J.; and Cleaver, Laird C., 4,397,349, Cl. 165-95.000.
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; Twieg, Robert J.; and Willson, Carlton G., to International Business Machines Corporation. Positive resist compositions. 4,397,937, Cl. 430-192.000.
Cleckler, Noel. Glass beveling apparatus. 4,397,118, Cl. 51-74.00R.
Clemence, Francois: *See*—
Allais, Andre; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, 4,397,856, Cl. 424-251.000.
Clini-Therm Corporation: *See*—
Vaguine, Victor A., 4,397,313, Cl. 128-399.000.
Vaguine, Victor A., 4,397,314, Cl. 128-399.000.
Cobe Laboratories, Inc.: *See*—
Johnson, Steven H.; Grover, Thomas P.; and Kenshalo, Richard M., 4,397,189, Cl. 73-861.000.
Coca-Cola Company, The: *See*—
Pergande, Michael W.; and Giusto, Anthony, 4,397,393, Cl. 206-549.000.
Cochran, Robert N.; and Deeba, Michel, to Air Products and Chemicals, Inc. Process for manufacturing alkylamines. 4,398,041, Cl. 564-479.000.
Coe Manufacturing Co., The: *See*—
Fields, Fred W., 4,397,343, Cl. 144-209.00A.
Colgate Palmolive Company: *See*—
Yurko, Joseph A., 4,397,777, Cl. 252-536.000.
Colin, Armand, to Agence Nationale de Valorisation de la Recherche (ANVAR). Sea anchor in particular for large ships. 4,397,257, Cl. 114-304.000.
Collins, Thomas A.: *See*—
Ballou, Edmund W.; Voelz, Frederick L.; and Collins, Thomas A., 4,397,183, Cl. 73-293.000.
Collishaw, Peter S.; and Bird, Donald, to Caligen Foam Limited; and W. E. Saxby (Nottingham) Limited. Personal cleaning products. 4,397,754, Cl. 252-91.000.
Colombo, Aristide, to Colombo & Cremona S.A.S. Rotary sheeters to suit them to the cut of wood veneers. 4,397,204, Cl. 83-289.000.
Colombo & Cremona S.A.S.: *See*—
Colombo, Aristide, 4,397,204, Cl. 83-289.000.
Colton, D. Frederick: *See*—
Lea, Richard K.; Edwards, Julian D.; and Colton, D. Frederick, 4,397,689, Cl. 75-108.000.
Columbia Chase Corporation: *See*—
Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., 4,397,579, Cl. 404-60.000.
Combustion Engineering, Inc.: *See*—
Mehta, Arun K.; and Borio, Richard W., 4,397,248, Cl. 110-263.000.
Commereuc, Dominique: *See*—
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,398,049, Cl. 585-512.000.
Commissariat a l'Energie Atomique: *See*—
Eloy, Jean-Francois; and Unsold, Eberhard, 4,398,090, Cl. 250-299.000.
Communications Patents Limited: *See*—
Gargini, Eric J., 4,398,214, Cl. 358-118.000.
Compagnie d'Electronique et de Piezo-Electricite: *See*—
Dube, Georges, 4,397,884, Cl. 427-38.000.
Compagnie des Lampes: *See*—
Villain, Jacques, 4,397,304, Cl. 126-443.000.
Compagnie Generale de Geophysique: *See*—
Cretin, Jacques; and Beauducel, Claude, 4,398,271, Cl. 367-20.000.
Computer Gesellschaft Konstanz mbH: *See*—
Bernhardt, Lutz, 4,398,177, Cl. 382-18.000.
Conco Inc.: *See*—
Fink, Carl E., 4,397,267, Cl. 122-4.00D.
Connell, James. Wheel cover simulating a wire spoke wheel. 4,397,504, Cl. 301-37.00P.
Connell, Lawrence E.: *See*—
Puhl, Larry C.; and Connell, Lawrence E., 4,398,265, Cl. 364-900.000.
Conoco Inc.: *See*—
Shannon, Mark L., 4,397,764, Cl. 252-429.00B.
Consiglio Nazionale Delle Ricerche: *See*—
Sergio, Carbonini; and Pelosi, Giancarlo, 4,397,617, Cl. 417-475.000.
Consolidated Papers, Inc.: *See*—
Damrau, Wayne A.; and Arrington, James R., 4,397,097, Cl. 33-182.000.
Continental Group, Inc., The: *See*—
Hellmer, Ernest W.; and Bartimes, George F., 4,397,625, Cl. 425-135.000.
Walter, John, 4,397,073, Cl. 29-446.000.
Walter, John, 4,397,400, Cl. 220-259.000.
Cook, Michael L.: *See*—
Fouss, James L.; Cook, Michael L.; and Hassan, Worthy O., 4,397,585, Cl. 405-183.000.
Cooney, James S., to Pylon Company, Inc. Electrical contact construction. 4,397,519, Cl. 339-255.00R.
Coquerel, Roger: *See*—
Gagnepain, Jean-Jacques; Hauden, Daniel; Coquerel, Roger; and Pegeot, Claude, 4,398,115, Cl. 310-313.00A.
Corke, Michael W.: *See*—
Chumbley, James F.; Corke, Michael W.; and Yount, Jo, 4,397,346, Cl. 160-84.00R.
Cornaby, David T.; and Halvorsen, Eric J., to Iomega Corporation. Combined serializer encoder and decoder for data storage system. 4,398,225, Cl. 360-39.000.
Cornelissens, Emery G. P.; and Gudden, Gerardus J. W. H., to Akzo nv. Feed unit for a detergent and packaging thereof. 4,397,391, Cl. 206-526.000.
Cornell, Robert J., to Uniroyal, Inc. Nitrile rubber/EPDM graft blends. 4,397,987, Cl. 525-75.000.
Cornet, Jean, to Thomson-CSF. Thermo-optical method for writing information and an information medium for the application of said method. 4,398,203, Cl. 346-135.100.
Corning Glass Works: *See*—
Beall, George H., 4,397,670, Cl. 65-33.000.
Cosyns, Jean: *See*—
Jacquin, Yves; Dinh, Chan T.; Gimenez-Coronado, Manuel; and Cosyns, Jean, 4,397,739, Cl. 208-210.000.
Couper, Robert A.; and Denning, Bruce S., to Pitney Bowes Inc. Circuit to enable foreground and background processing in a word processing system with circuits for performing a plurality of independently controlled functions. 4,398,264, Cl. 364-900.000.
Coutin, Pierre F.: *See*—
Guitaut, Philippe P.; and Coutin, Pierre F., 4,397,433, Cl. 244-137.00R.
Coutures, Jean-Louis: *See*—
Benoit-Gonin, Roger; Berger, Jean-Luc; Coutures, Jean-Louis; Forster, Daniel; and Picquendar, Jean-Edgar, 4,398,099, Cl. 307-246.000.
Cowgill, Charles F.; and Di Bella, Frank J. Mechanized stand handling apparatus for drilling rigs. 4,397,605, Cl. 414-745.000.
Cox, Michael K.; and Griffin, Brian P., to Imperial Chemical Industries PLC. Anisotropic melt forming polyesters and polyesteramides. 4,398,019, Cl. 528-183.000.
Craig, Robert J. G.; Imbault, James J.; and Fitzgerald, John E., to Incosym, Inc. Inertial instrument with cup-shaped inertial mass. 4,397,185, Cl. 73-504.000.
Craig, William R. Roof truss suspension. 4,397,492, Cl. 294-81.00R.
Crapiz, Dino: *See*—
Heidmann, Richard; and Crapiz, Dino, 4,397,430, Cl. 244-3.160.
Crawford, Jacob H. Overhead door. 4,397,115, Cl. 49-70.000.
Cretin, Jacques; and Beauducel, Claude, to Institut Francais du Petrole; and Compagnie Generale de Geophysique. Device for data transmission between seismic data acquisition devices and a recording device. 4,398,271, Cl. 367-20.000.
Crick, Aubrey M.: *See*—
Hodges, Robert J.; Crick, Aubrey M.; and Rogers, Charles E., 4,398,071, Cl. 200-67.0DB.
Cristell, Frank A.: *See*—
Fisher, Richard W.; and Cristell, Frank A., 4,397,435, Cl. 248-61.000.
Croley, Thomas E., to Willamette Industries, Inc. Knocked-down drum-like fiberboard container for bulk material with funnel-like dispensing bottom. 4,397,406, Cl. 222-105.000.
Cros, Jacques. Method and a covering for heat insulation and protection of a construction. 4,397,122, Cl. 52-3.000.
Crosby, Robert J.: *See*—
McFadyen, Robert J.; Peil, William; Davenport, John M.; and Crosby, Robert J., 4,398,130, Cl. 315-226.000.
Croteau, James C. Impact-protective suit for racquetball. 4,397,043, Cl. 2-2.000.
Crothers, William, to Deer Park Baking Co. Cookie bits. 4,397,881, Cl. 426-565.000.
Crothers, William G., to Deer Park Baking Co. Ice cream product containing cookie bits. 4,397,880, Cl. 426-565.000.
Crum, Louis J.: *See*—
Bramow, Scott B.; Crum, Louis J.; and Riebe, William J., 4,398,087, Cl. 235-200.0PF.
Cuchiara, Samuel M. Reversable shaft with rotary and selective oscillating motion. 4,397,055, Cl. 15-22.00R.
Cunningham, Glenn R., to Cunningham & Thompson, Inc. Heat resistant protective coating. 4,397,338, Cl. 138-145.000.
Cunningham & Thompson, Inc.: *See*—
Cunningham, Glenn R., 4,397,338, Cl. 138-145.000.
Curelaru, Johan: *See*—
Gustavsson, Bengt; Curelaru, Johan; and Linder, Lars-Erik, 4,397,091, Cl. 33-127.000.
Curran, Randy J.: *See*—
Karp, Edward C.; and Curran, Randy J., 4,398,253, Cl. 364-466.000.

Currence, Evan J., to Lake Center Industries. Solid-state electronic brush speed sensing control. 4,398,231, Cl. 361-23.000.

Czaja, James J., to Circuit Chemistry Corporation. Solder stripping solution. 4,397,753, Cl. 252-79.300.

Czala, Ferenc L., to Lan-Elec Limited. Food slicer. 4,397,206, Cl. 83-399.000.

Czernik, Daniel E., to Felt Products Mfg. Co. Cylinder head gasket with expanded graphite filler. 4,397,472, Cl. 277-235.00B.

Dadswell, John E.: *See*—
Eldridge, Michael W.; and Dadswell, John E., 4,397,366, Cl. 180-116.000.

Dahan, Pierre-Louis; and Letuan, Phac. Video system for plotting and transmitting video traffic information. 4,398,171, Cl. 340-22.000.

Daimler-Benz Aktiengesellschaft: *See*—
Pickard, Jurgen; and Frank, Jurgen, 4,397,621, Cl. 418-236.000.

Dainippon Ink and Chemicals, Inc.: *See*—
Homma, Minoru; Okoshi, Noboru; Kudo, Kin-ichi; Shimoyama, Soichi; and Tashiro, Nansei, 4,398,016, Cl. 528-158.500.

d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., to Staar S. A. Method and apparatus for cassette identification by operating characteristics. 4,398,300, Cl. 377-18.000.

Damrau, Wayne A.; and Arrington, James R., to Consolidated Papers, Inc. Gauge for measuring roll nips. 4,397,097, Cl. 33-182.000.

D'Andrade, Bruce M.; and Yuen, Johnny S. C., to Arco Industries Ltd. Simulated tin can target game. 4,397,468, Cl. 273-381.000.

Daniels, Florence S.: *See*—
Daniels, Robert C.; and Daniels, Florence S., 4,397,646, Cl. 604-381.000.

Daniels, Robert C.; and Daniels, Florence S., to Blessings Corp. Contoured baby diaper. 4,397,646, Cl. 604-381.000.

Danielson, David J.; and Golbeck, Bernard J., to Oak Industries Inc. Low profile switch having a sealed interior. 4,398,074, Cl. 200-302.000.

Danilevich, Yanush B.; Ostreiko, Vladimir N.; Chernikov, Jury L.; and Chubraeva, Lidia I. Stator of a cryogenic electric machine. 4,398,108, Cl. 310-54.000.

Dano, Paul K., to Del Norte Technology, Inc. Method of and apparatus for guiding agricultural aircraft. 4,398,195, Cl. 343-6.50R.

Dano, Paul K.; and Ko, Eric C., to Del Norte Technology, Inc. Pulse-hyperbolic location system using three passive beacon measurements. 4,398,198, Cl. 343-103.000.

Dard, Philippe; and Cazes, Roland, to Sciaky Intertechnique S.A. Machine for working metals using electron beams. 4,398,079, Cl. 219-121.0EC.

Dardoufas, Kimon C.: *See*—
Marshall, Robert M.; Dardoufas, Kimon C.; and Lazarus, Stanley D., 4,397,985, Cl. 524-837.000.

Darecchio, Andrea, to FMC Corporation. Apparatus for providing overriding pressure in heat processing sealed containers. 4,397,814, Cl. 422-111.000.

Dargel, William O.; Lougheed, Robert M.; and McCubbrey, David L., to Environmental Research Institute of Michigan. Image analyzer with common data/instruction bus. 4,398,176, Cl. 382-27.000.

Darling, Donald W.; Dennis, Thomas M.; Thayer, Stevan J.; and Zimmer, Bonnie A., to Bell Telephone Laboratories, Incorporated. Data set network diagnostic system. 4,398,299, Cl. 375-8.000.

Darroussin, Michel; and Marchand, Daniel, to Soletanche. Ground anchorage means utilizing a reinforcement or tie insulated from the ground. 4,397,589, Cl. 405-260.000.

Data General Corporation: *See*—
Holberger, Kenneth D.; Veres, James E.; Ziegler, Michael L.; and Henry, Carl, 4,398,243, Cl. 364-200.000.

Date, Nobuaki: *See*—
Sakurada, Nobuaki; Date, Nobuaki; Shimizu, Masami; and Aizawa, Hiroshi, 4,397,534, Cl. 354-23.00D.

Dathe, Joachim: *See*—
Arlt, Manfred; and Dathe, Joachim, 4,397,695, Cl. 148-1.500.

Davenport, Anthony T.; Dickinson, David W.; and DiMicco, Daniel R., to Republic Steel Corporation. Method of making as-hot-rolled plate. 4,397,698, Cl. 148-12.00F.

Davenport, John M.: *See*—
McFadyen, Robert J.; Peil, William; Davenport, John M.; and Crosby, Robert J., 4,398,130, Cl. 315-226.000.

Davey, Gordon, to National Research Development Corporation. Stirling cycle machines. 4,397,155, Cl. 62-6.000.

Davidson, Evan E.; Katopis, George A.; and Rubin, Barry J., to International Business Machines Corporation. On-chip Delta-I noise clamping circuit. 4,398,106, Cl. 307-549.000.

Davies, Gerald B.; and Shea, Roger J., to Pentwyn Precision, Ltd. Pneumatic yarn splicing. 4,397,137, Cl. 57-22.000.

Davis, Clifford E. S.; and Spector, George. Quick shower or power shower. 4,397,050, Cl. 4-601.000.

Davis, Richard H., to Direct Reduction Corporation, The. System for correlating a signal sensor location with a recorder printout. 4,397,569, Cl. 374-154.000.

Davis, William O.: *See*—
Rottenberg, Mark M.; and Davis, William O., 4,397,240, Cl. 102-376.000.

Dawdy, Terrance H., to Lord Corporation. Compositions and methods for improving adhesion to plastic substrates. 4,397,707, Cl. 156-307.500.

Dawson, Charles R.; Li, Norman N.; and O'Brien, Dennis E., to Exxon Production Research Co. Method of using a well treating fluid. 4,397,354, Cl. 166-294.000.

Dawson, Daniel J.; and Brock, Phillip J., to Dynapol. Ultraturbulent coupling of polymeric diazonium salts. 4,397,997, Cl. 525-384.000.

De La Mare, Harold E.; and Brownscombe, Thomas F., to Shell Oil Company. Curable epoxy compositions suitable for use in RIM processes. 4,397,998, Cl. 525-420.500.

De Limon Fluhme GmbH & Co.: *See*—
Saretzky, Horst, 4,397,376, Cl. 184-7.00D.

Deacon, David W.: *See*—
Jensen, James R.; and Deacon, David W., 4,397,478, Cl. 280-711.000.

Deady, Martin A., to Westland Aircraft Limited. Apparatus for moving a helicopter along a deck. 4,397,254, Cl. 114-261.000.

DeBona, Bruce T.: *See*—
Akkapeddi, Murali K.; DeBona, Bruce T.; Lai, Yu-Chin; and Prevorsek, Dusan C., 4,398,018, Cl. 528-176.000.

Deeba, Michel: *See*—
Cochran, Robert N.; and Deeba, Michel, 4,398,041, Cl. 564-479.000.

Deer Park Baking Co.: *See*—
Crothers, William, 4,397,881, Cl. 426-565.000.
Crothers, William G., 4,397,880, Cl. 426-565.000.

Deere & Company: *See*—
Friesen, Henry; and Rosbak, John, 4,397,221, Cl. 91-420.000.
Kraske, Leroy E.; Werner, Gregory K.; and Beauchamp, Lynn I., 4,397,603, Cl. 414-695.500.
Price, David S.; Schafer, Richard A.; and Kittle, Carl E., 4,397,359, Cl. 172-430.000.
Schuhmacher, Ernst, 4,397,319, Cl. 130-27.0HF.

Deforeit, Christian J., to Matth. Hohner AG. Method of determining chord type and root in a chromatically tuned electronic musical instrument. 4,397,209, Cl. 84-1.030.

Degen, Hans-Juergen; and Grychtol, Klaus, to BASF Aktiengesellschaft. Polymeric dyes derived from bis-reactive methylene compounds and aromatic di-aldehydes for paper. 4,397,651, Cl. 8-506.000.

Degen, Kurt, to Rasselstein AG. Device for electrodepositing a single-sided metal coating onto a metal strip, especially onto steel strip. 4,397,727, Cl. 204-206.000.

Degussa Aktienbesellschaft: *See*—
Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf, 4,398,042, Cl. 568-62.000.

de Hek, Johan A.: *See*—
Mohan, Anand; and de Hek, Johan A., 4,397,715, Cl. 204-11.000.

De Kraker, Larry, to Bell & Howell Company. Pendulum suspended bumper assembly. 4,397,372, Cl. 180-277.000.

Del Norte Technology, Inc.: *See*—
Dano, Paul K., 4,398,195, Cl. 343-6.50R.
Dano, Paul K.; and Ko, Eric C., 4,398,198, Cl. 343-103.000.

Denning, Bruce S.: *See*—
Couper, Robert A.; and Denning, Bruce S., 4,398,264, Cl. 364-900.000.

Dennis, Thomas M.: *See*—
Darling, Donald W.; Dennis, Thomas M.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,398,299, Cl. 375-8.000.

Deraedt, Roger: *See*—
Allais, Andre; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, 4,397,856, Cl. 424-251.000.

Derbenwick, Gary F.; Adams, James R.; Hanson, Matthew V.; and Ryden, William D., to Inmos Corporation. Method of fabricating self-aligned MOS devices and independently formed gate dielectrics and insulating layers. 4,397,077, Cl. 29-571.000.

Derby, Palmer P.: *See*—
Freedman, George; and Derby, Palmer P., 4,398,077, Cl. 219-10.55E.

Derivaz, Jean-Pierre: *See*—
Duruz, Jean-Jacques R.; and Derivaz, Jean-Pierre, 4,397,729, Cl. 204-243.00R.

D'Errico, Michael J.: *See*—
Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., 4,397,851, Cl. 424-250.000.

Derzawiec, Edward; Nelson, Wade H.; and Petty, Cleon, to Motorola, Inc. Enabling circuitry for logic circuits. 4,398,103, Cl. 307-454.000.

Desai, Nitin V.; and Gavalchin, Emil J., to RCA Corporation. Method of forming resist patterns using X-rays or electron beam. 4,397,938, Cl. 430-296.000.

Desbiens, Regis: *See*—
Gaucher, Edwin; Desbiens, Rejean; and Desbiens, Regis, 4,397,099, Cl. 33-367.000.

Desbiens, Rejean: *See*—
Gaucher, Edwin; Desbiens, Rejean; and Desbiens, Regis, 4,397,099, Cl. 33-367.000.

Designs for Vision, Inc.: *See*—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, 4,397,523, Cl. 350-96.200.

Dettmer, Gerhard; and Hammerschmidt, Peter, to Hoechst Aktiengesellschaft. Adhesive tape. 4,397,905, Cl. 428-180.000.

Deutsche Texaco Aktiengesellschaft: *See*—
Maxelon, Rainer, 4,397,694, Cl. 134-151.000.

de Vos, Hendrik A. J.; and Sitzema, Ronald L., Jr., to GTE Products Corporation. Luminaire adapted for horizontal and vertical operation. 4,398,239, Cl. 362-263.000.

DeVries, Vern G., to American Cyanamid Company. Method of treating atherosclerosis with trisubstituted ureas. 4,397,868, Cl. 424-322.000.

deVroome, Henderikus: *See*—
Haisma, Jan; Boesten, Johannes K. A.; and deVroome, Henderikus, 4,397,669, Cl. 65-30.140.

Dewey, George G., to Illinois Tool Works Inc. Standup screw gun for long fasteners. 4,397,412, Cl. 227-119.000.

Dham, Vinod K.: *See*—
Honnigford, Edward H.; and Dham, Vinod K., 4,397,076, Cl. 29-571.000.
Dhein, Rolf: *See*—
Hocker, Jurgen; and Dhein, Rolf, 4,397,971, Cl. 524-40.000.
d'Hinterland, Lucien D.; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, to Pierre Fabre S.A. Preparations of purified bacterial membranal proteoglycans. 4,397,838, Cl. 424-92.000.
Diamond Shamrock Corporation: *See*—
Duruz, Jean-Jacques R.; and Derivaz, Jean-Pierre, 4,397,729, Cl. 204-243.00R.
Di Bella, Frank J.: *See*—
Cowgill, Charles F.; and Di Bella, Frank J., 4,397,605, Cl. 414-745.000.
Dice, Robert F.: *See*—
Dice, Rodney L.; Hillman, Jimmy E.; and Dice, Robert F., 4,397,362, Cl. 175-393.000.
Dice, Rodney L.; Hillman, Jimmy E.; and Dice, Robert F. Drilling head. 4,397,362, Cl. 175-393.000.
Dickey, Leland C.; and Tayter, Maya, to InterNorth, Inc. Organic solid substrate dewatering process based on plug flow contact by an extractive fluid. 4,397,100, Cl. 34-9.000.
Dickie, Hugh G.; Hearn, Anthony R.; and Heath, John S., to International Business Machines Corporation. Limited angle electric rotary actuator. 4,398,167, Cl. 335-272.000.
Dickinson, David W.: *See*—
Davenport, Anthony T.; Dickinson, David W.; and DiMicco, Daniel R., 4,397,698, Cl. 148-12.00F.
Dickstein, Heidi L.; and Dickstein, William H., to International Business Machines Corporation. Magnetic disk coatings. 4,397,751, Cl. 252-62.540.
Dickstein, William H.: *See*—
Dickstein, Heidi L.; and Dickstein, William H., 4,397,751, Cl. 252-62.540.
Diem, Hans: *See*—
Rometsch, Johannes; Frey, Werner U.; and Diem, Hans, 4,398,180, Cl. 340-365.00L.
Diesel Kiki Co., Ltd.: *See*—
Kaibara, Nobuhiro; and Kobayashi, Masayoshi, 4,397,284, Cl. 123-502.000.
Takahashi, Masaatsu, 4,397,277, Cl. 123-373.000.
Dieterich, Charles B., to RCA Corporation. Signal expander/compressor with adaptive control circuit. 4,398,157, Cl. 330-86.000.
Dietrich, Felix M.: *See*—
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,397,844, Cl. 424-177.000.
Dietrich, Klaus; Lichti, Reiner; and Rosenstock, Gunter, to Siemens Aktiengesellschaft. Circuit for operating recording nozzles. 4,398,204, Cl. 346-140.000.
Dietrich, William J., Sr.; and Kovach, Michael G., to DMI, Inc. Bumper hitch with universal mounting support. 4,397,475, Cl. 280-495.000.
Dillard, George M., to United States of America, Navy. Digital sidelobe canceller with real weights. 4,398,197, Cl. 343-100.0LE.
Dillon, Michael J., to U.S. Steel Corporation. Fence post-top rail connector. 4,397,448, Cl. 256-65.000.
Dilmore, Colonel R.; Raetzsch, Carl W., Jr.; and McGinley, James J., to PPG Industries, Inc. Bipolar electrolyzer process. 4,397,735, Cl. 204-98.000.
DiMicco, Daniel R.: *See*—
Davenport, Anthony T.; Dickinson, David W.; and DiMicco, Daniel R., 4,397,698, Cl. 148-12.00F.
DiMonico, George S.: *See*—
Schell, Frank M.; DiMonico, George S.; and Bania, Joseph, 4,398,097, Cl. 307-64.000.
Dimpfl, William L., to Chevron Research Company. Process and apparatus for removing a pollutant from a gas stream. 4,397,823, Cl. 423-210.000.
Dingwall, John G.; and Tuck, Brian, to Ciba-Geigy Corporation. 4-Chloro-4-chloromethyloxetan-2-one and a process for its production. 4,398,033, Cl. 549-329.000.
Dinh, Chan T.: *See*—
Jacquin, Yves; Dinh, Chan T.; Gimenez-Coronado, Manuel; and Cosyns, Jean, 4,397,739, Cl. 208-210.000.
Dion, Daniel J.; and Ranini, Daniel G., to Poclain. Supporting chassis for working machine, with central frame and side-members. 4,397,481, Cl. 280-781.000.
Direct Reduction Corporation, The: *See*—
Davis, Richard H., 4,397,569, Cl. 374-154.000.
Discovision Associates: *See*—
Holmes, John R., 4,397,805, Cl. 264-328.140.
Dittmar & Penn Corp.: *See*—
Molko, William P., 4,397,312, Cl. 128-325.000.
DMI, Inc.: *See*—
Dietrich, William J., Sr.; and Kovach, Michael G., 4,397,475, Cl. 280-495.000.
Dmitriev, Stanislav P.: *See*—
Razin, Gennady I.; and Dmitriev, Stanislav P., 4,398,132, Cl. 315-307.000.
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Xenzhek, Oktavian S.; Shembel, Elena M.; Litvinova, Valentina I.; Martynenko, Tamara L.; Raikhelson, Leonid B.; Sokolov, Leonid A.; and Moskovsky, Valentin Z., 4,397,921, Cl. 429-105.000.
Doak, Clayton R. Inflatable sole-shoe. 4,397,104, Cl. 36-29.000.
Doany, Paul: *See*—
Gott, Geoffrey F.; Doany, Paul; and Sepehri, Majid, 4,398,296, Cl. 375-1.000.
Dobbs, Robert J.: *See*—
Benjamin, Mary Lou; Dobbs, Robert J.; and Shaffer, Mary E., 4,397,889, Cl. 427-221.000.
Doblar, Dennis D.; and Hinkle, John C. Rotary valve especially useful in a medical system including a flow-directed venous catheter. 4,397,335, Cl. 137-625.190.
Docutel Corporation: *See*—
Hickey, Richard C., 4,397,455, Cl. 271-3.100.
Dodd, Malcolm J., to UOP Inc. Apparatus for chilling a plurality of food trays. 4,397,159, Cl. 62-382.000.
Dodds, Robert E.; and Harrigan, David J., to GTE Products Corporation. Coated phosphor particles, method, and cathode ray tube screen. 4,398,119, Cl. 313-466.000.
Doetsch, Werner; and Fuchs, Paul-Wilhelm, to Peroxid-Chemie GmbH. Process for the continuous production of alkali metal superoxides. 4,397,833, Cl. 423-581.000.
Doi, Shuhei; and Isaka, Tsutomu, to Mitsubishi Petrochemical Company Limited. Ethylene polymer compositions that are flame retardant. 4,397,981, Cl. 524-465.000.
Doi, Toshitada; and Odaka, Kentarou, to Sony Corporation. Method and apparatus for encoding digital with two error correcting codes. 4,398,292, Cl. 371-39.000.
Doi, Yoshio: *See*—
Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, 4,397,835, Cl. 424-35.000.
Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., to Upjohn Company, The. Process for production of antibiotic U-64,767 using *Streptomyces macronensis* NRRL 12566. 4,397,950, Cl. 435-125.000.
Donn, Incorporated: *See*—
Mieyal, David F., 4,397,127, Cl. 52-241.000.
Donnelly, Vincent M.; Flamm, Daniel L.; and Ibbotson, Dale E., to Bell Telephone Laboratories, Incorporated. Crystallographic etching of III–V semiconductor materials. 4,397,711, Cl. 156-643.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Yoshida, Mitsuo, 4,397,719, Cl. 204-91.000.
Dow Chemical Company, The: *See*—
Allison, Joseph L., 4,397,957, Cl. 436-133.000.
Bertram, James L.; and Woo, Edmund P., 4,398,002, Cl. 525-523.000.
Campbell, Kent D.; Langer, Horst G.; and Martin, Patrick H., 4,397,970, Cl. 523-402.000.
Harris, Monty E., 4,397,351, Cl. 166-134.000.
Irwin, Robert S., 4,398,003, Cl. 525-531.000.
McKinney, Linda D.; and Jenkines, Randall C., 4,397,978, Cl. 524-409.000.
Strom, Robert M., 4,397,785, Cl. 260-396.00N.
Tefertiller, Nancy B.; and Harris, Robert F., 4,397,993, Cl. 525-328.200.
Doyel, John S. Miniature battery-operated light. 4,398,237, Cl. 362-186.000.
Drabert Solme: *See*—
Brenik, Wenzel; and Riedel, Dieter, 4,397,158, Cl. 62-380.000.
Draheim, Peter; and Hapke, Friedrich, to U.S. Philips Corporation. Test circuit for MOS devices. 4,398,146, Cl. 324-73.00R.
Drawert, Manfred; and Imoehl, Wolfgang, to Schering Aktiengesellschaft. Polyesteramide adhesives and sealing compounds. 4,397,991, Cl. 525-167.000.
Drejza, John E.; Manning, Donald F.; and Wilson, Joseph T., III, to International Business Machines Corporation. Print head actuator. 4,397,576, Cl. 400-320.000.
Dremel, Bernhard, to Ulrich Steinemann AG, Maschinenfabrik. Machine for one-sided coating of thin sheets. 4,397,258, Cl. 118-50.000.
Dresser Industries, Inc.: *See*—
Klem, John E., 4,397,348, Cl. 165-41.000.
Langford, James W., Jr., 4,397,361, Cl. 175-329.000.
Drilling & Service U.K. Limited: *See*—
Fuller, John M., 4,397,363, Cl. 175-410.000.
Dry Dock Industries, Inc.: *See*—
Smith, Jon D.; and Parker, Glenn T., 4,397,595, Cl. 411-15.000.
Drygas, Thomas C. J., III. Vehicular and passenger transportation system. 4,397,496, Cl. 296-1.00S.
Dube, Georges, to Compagnie d'Electronique et de Piezo-Electricite. Process for stabilizing in time a piezoelectric resonator. 4,397,884, Cl. 427-38.000.
DuBois, R. Clark; and Hamma, John C., to Gradco/Dendoki, Inc. Sorting machine. 4,397,461, Cl. 271-293.000.
Dubovi, Edward J.: *See*—
Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., 4,397,863, Cl. 424-274.000.
Duckett, Roy J.: *See*—
Gilliland, Charles S.; and Duckett, Roy J., 4,397,716, Cl. 204-33.000.
Dudkin, Viktor E.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.
Dufay, Jean-Claude, to Etat Francais, represente par le Ministere de l'Environement et de Cadre de Vie, Laboratoire Central des Ponts et Chaussess. Converter for converting non-luminous photons into luminous photons. 4,398,093, Cl. 250-483.100.

Dunsmore, Howard L. Method and apparatus for reducing the rate of heat transfer. 4,397,121, Cl. 52-1.000.

Du Pont de Nemours, E. I., and Company: *See—*
Adesko, Paul L., 4,397,989, Cl. 525-162.000.
Bindloss, William; and Zumsteg, Fredrick C., Jr., 4,397,929, Cl. 430-39.000.
Binnersley, Edwin K., 4,397,164, Cl. 68-200.000.
Fickes, Michael G., 4,397,941, Cl. 430-331.000.
Frazer, August H., 4,398,015, Cl. 528-125.000.
Sauers, Richard F., 4,397,679, Cl. 71-92.000.
Tsakumis, Theodore G., 4,397,980, Cl. 524-424.000.

Duracell Inc.: *See—*
Rea, Jesse R.; Kallianidis, Milton; and Kelsey, G. Stephen, 4,397,924, Cl. 429-191.000.

Durand, Guy; and Paulin, Daniel, to Legrand. Self-clamping electrical connectors and terminal blocks. 4,397,514, Cl. 339-95.00D.

Durand, Jacques: *See—*
d'Hinterland, Lucien D.; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 4,397,838, Cl. 424-92.000.

Duruz, Jean-Jacques R.; and Derivaz, Jean-Pierre, to Diamond Shamrock Corporation. Cermet anode electrowining metals from fused salts. 4,397,729, Cl. 204-243.00R.

Dyachenko, Vladimir K.: *See—*
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.

Dyck, Rudolph H., to Fairchild Camera & Instrument Corporation. Multiple preamplifiers with intervening overflow cell for charge coupled imaging devices. 4,398,301, Cl. 377-60.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Franz, Arnold; Schneider, Ernst; and Jakobshagen, Gregor, 4,397,882, Cl. 427-391.000.

Dynapol: *See—*
Dawson, Daniel J.; and Brock, Phillip J., 4,397,997, Cl. 525-384.000.

E. R. Squibb & Sons, Inc.: *See—*
Varma, Ravi K., 4,397,782, Cl. 260-239.500.

Eastern Company, The: *See—*
Pastva, John V., 4,397,488, Cl. 292-210.000.

Eastman Kodak Company: *See—*
Clark, Gary T.; and Weaver, Max A., 4,397,781, Cl. 260-152.000.
Edmonson, William L.; and McCollum, Anthony W., 4,398,034, Cl. 560-1.000.
Geyer, Frederick F., 4,397,527, Cl. 350-400.000.
Harvey, Donald M., 4,397,535, Cl. 354-212.000.
McClure, Richard J., 4,398,229, Cl. 360-113.000.
Seim, Roy H.; and Bagby, John F., 4,398,226, Cl. 360-65.000.
Sublett, Bobby J., 4,398,022, Cl. 528-302.000.

Eaton Corporation: *See—*
Carroll, Robert J.; Keller, Roger A.; Lane, E. James; and Williams, Freddie G., 4,398,172, Cl. 340-38.00P.
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,398,205, Cl. 357-38.000.

Eberle, Jurg, to Ferag Ag. Apparatus for separation of a stack of folded or bound, multi-sheet printed products. 4,397,456, Cl. 271-10.000.

Ebrey, Roger G. A.; and Sckerl, Herbert A., to Western Electric Company, Inc. Conductor escapement apparatus. 4,397,084, Cl. 29-749.000.

Eck, Herbert; Adler, Klaus; Hannebaum, Manfred; and Lechner, Wilhelm, to Wacker-Chemie GmbH. Process for the manufacture of copolymers having increased resistance against hydrolysis, the copolymers and their use. 4,397,968, Cl. 523-305.000.

Eckel Industries, Inc.: *See—*
Shipp, Earl H., 4,397,117, Cl. 49-501.000.

Eckert, Ronald P., to Thomas A. Schutz Co., Inc. Method of making multiplanar devices of sheet plastic. 4,397,705, Cl. 156-242.000.

Edgren, Anders T.; and Svedberg, Lars-Olof, to KemaNord AB. Process for drying and expanding microspheres. 4,397,799, Cl. 264-53.000.

Edmonson, William L.; and McCollum, Anthony W., to Eastman Kodak Company. Process for the preparation of low molecular weight polyesters from hydroxypivaldehyde. 4,398,034, Cl. 560-1.000.

Edstrom, Lars G., to Malmohus Invest AB. Suction-type inserter for picking up and transporting non-rigid sheets. 4,397,458, Cl. 271-14.000.

Edwards, Julian D.: *See—*
Lea, Richard K.; Edwards, Julian D.; and Colton, D. Frederick, 4,397,689, Cl. 75-108.000.

Eftefield, Larry G.; and Horton, Edward R., to Caterpillar Tractor Co. Tube expander. 4,397,173, Cl. 72-392.000.

Eggleston, Robert G.: *See—*
Genco, Louis V.; and Eggleston, Robert G., 4,397,554, Cl. 356-239.000.

Eiju, Tomoaki: *See—*
Matsuda, Kiyofumi; and Eiju, Tomoaki, 4,397,550, Cl. 356-28.500.

Eilers, Jacobus; and Stork, Willem H. J., to Shell Oil Company. Process for reducing the Ramsbottom carbon test of asphalt. 4,397,733, Cl. 208-96.000.

Eilers, Jacobus; and Stork, Willem H. J., to Shell Oil Company. Process for reducing ramsbottom carbon test of short residues. 4,397,734, Cl. 208-96.000.

Eisai Co., Ltd.: *See—*
Taki, Kazuo; Machida, Ryoichi; and Katayama, Kouichi, 4,397,951, Cl. 435-188.000.

Elam Limited: *See—*
Tarroux, Pierre; and Le Pochard, Jacques, 4,398,131, Cl. 315-294.000.

Eldridge, Michael W.; and Dadswell, John E., to British Hovercraft Corp. Ltd. Air cushion vehicles. 4,397,366, Cl. 180-116.000.

Electric Power Research Institute, Inc.: *See—*
Bahder, George; and Rabinowitz, Mario, 4,397,807, Cl. 264-512.000.

Electronics Corporation of America: *See—*
Bala, John L.; and Boswell, Charles R., 4,398,233, Cl. 361-78.000.

Electronique Marcel Dassault & Centre National d'Etudes Spatiales: *See—*
Geesen, Michel; Mourant, Jacques; and Ludwig, Daniel P., 4,398,286, Cl. 370-69.100.

Elekto-Apparatebau Olten, A.G.: *See—*
Vogel, Ernst, 4,398,075, Cl. 200-314.000.

Elektro-Brite GmbH & Co. KG.: *See—*
Acimovic, Simeon; Lindemann, Karl-Heinz; and Kunz, Volker G., 4,397,717, Cl. 204-55.00Y.

Eli Lilly and Company: *See—*
Abdulla, Riaz F., 4,398,044, Cl. 568-318.000.

Ellicott Machine Corporation: *See—*
McDowell, Alexander W. K., 4,397,106, Cl. 37-57.000.

Elliott, George A.: *See—*
Robert, Andre; and Elliott, George A., 4,397,865, Cl. 424-317.000.

Elliott Turbomachinery Co., Inc.: *See—*
Carroll, Alexander A.; and Hannan, William F., III, 4,397,470, Cl. 277-1.000.

Elmore, Walter A., to Westinghouse Electric Corp. Protective relaying methods and apparatus. 4,398,232, Cl. 361-47.000.

Eloy, Jean-Francois; and Unsold, Eberhard, to Commissariat a l'Energie Atomique; and Gesellschaft fur Strahlen und Umweltforschung mbH. Panoramic ion detector. 4,398,090, Cl. 250-299.000.

Elzerman, Jan B.: *See—*
Op den Velde, Jan; Elzerman, Jan B.; and Oterdoom, Klaas, 4,397,587, Cl. 405-222.000.

Embadac: *See—*
Bidegain, Georgy, 4,397,387, Cl. 206-45.230.

Embru-Werke, Mantel & CIE: *See—*
Rutsche, Wendolin; and Langenegger, Urs, 4,397,244, Cl. 108-6.000.

Emhart Industries, Inc.: *See—*
Smith, John W., 4,398,168, Cl. 337-58.000.

EMI Limited: *See—*
LeMay, Christopher A. G., 4,398,251, Cl. 364-414.000.

Emmett, Paul L.: *See—*
Malcolm, Richard E.; Assenheim, Harry M.; Emmett, Paul L.; and Chan, Richard, 4,397,555, Cl. 356-248.000.

Energy Analysts Incorporated: *See—*
Kruppenbach, John A., 4,398,276, Cl. 367-191.000.

Energy Profiles, Inc.: *See—*
Salisbury, Winfield W., 4,397,809, Cl. 376-107.000.
Salisbury, Winfield W., 4,397,810, Cl. 376-107.000.

Energy Research Corporation: *See—*
Chi, Chang V.; and Leonida, Andrei, 4,397,917, Cl. 429-26.000.
Chi, Chang V., 4,397,918, Cl. 429-26.000.

Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., to Merck & Co., Inc. 2,3-Dihalo-2,3-(disubstituted) propanoate antimicrobial compounds. 4,397,851, Cl. 424-250.000.

Enshu Limited: *See—*
Tanaka, Hiroaki, 4,398,136, Cl. 318-561.000.

Entenmann, Robert: *See—*
Rohde, Siegfried; Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Schramm, Herbert; and Schmidt, Gunther, 4,397,176, Cl. 73-35.000.

Entis, Michael P.: *See—*
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Entis, Phyllis; and Entis, Michael P. Transfer apparatus for microorganisms. 4,397,955, Cl. 435-292.000.

Environmental Research Institute of Michigan: *See—*
Dargel, William O.; Lougheed, Robert M.; and McCubbrey, David L., 4,398,176, Cl. 382-27.000.

Enzer, Steven E.; and Sarrine, Robert J., to Transidyne General Corp. Apparatus for measuring electrochemical activity. 4,397,725, Cl. 204-406.000.

Erickson, Robert A., to Kennametal Inc. Insert holder and method of holding. 4,397,592, Cl. 407-105.000.

Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Method for making linear motion rolling bearing. 4,397,802, Cl. 264-219.000.

ESAB Aktiebolag: *See—*
Johansson, Jan G.; Henningsen, Christian J.; and Koster, Arvo, 4,398,080, Cl. 219-130.100.

Escher Wyss GmbH: *See—*
Lambrecht, Gerhard, 4,397,713, Cl. 162-261.000.

Eschweiler, Wilhelm; and Leyendecker, Gerhard, to Ferring Arzneimittel GmbH. Device for the intermittent pulsatory application of fluid medicaments. 4,397,639, Cl. 604-153.000.

Espenscheid, Wilton F.: *See—*
Yan, Tsoung-Yuan; and Espenscheid, Wilton F., 4,397,819, Cl. 423-7.000.

Ess, Wilfried; and Kollmann, Horst, to Schelling & Co., Firma. Apparatus for alignment of large planar members at feed tables of machine tools. 4,397,598, Cl. 414-28.000.
Etablissement Public de Diffusion dit Telediffusion de France: *See*—
Mathieu, Michel; Charbonnel, Pierre; and Pacaud, Jean-Claude, 4,398,290, Cl. 370-94.000.
Etat Francais, represente par le Ministere de l'Environnement et de Cadre de Vie, Laboratoire Central des Ponts et Chaussess: *See*—
Dufay, Jean-Claude, 4,398,093, Cl. 250-483.100.
Ethyl Corporation: *See*—
Hornbaker, Edwin D., 4,397,986, Cl. 525-64.000.
Ethyl Products Company: *See*—
King, Roderick V., 4,397,597, Cl. 413-23.000.
Etschenberg, Eugen: *See*—
Welter, Andre; Lautenschlager, Hans-Heiner; Etschenberg, Eugen; and Leyck, Sigurd, 4,397,858, Cl. 424-270.000.
Evans, Ben E.; and Rittle, Kenneth E., to Merck & Co., Inc. Method of preparing statine and derivatives. 4,397,786, Cl. 260-404.000.
Evans, William J.; and Haddad, Charles, to Ford Motor Company. Low profile bumper. 4,397,490, Cl. 293-120.000.
Evva-Werk Spezialerzeugung von Zylinder-und Sicherheitsschloessern GmbH & Co.: *See*—
Paar, Adalbert, 4,397,166, Cl. 70-276.000.
Ex-Cell-O Corporation: *See*—
Lisiecki, Robert E., 4,397,394, Cl. 206-608.000.
Lisiecki, Robert E., 4,397,415, Cl. 229-17.00R.
Exalto, Robertus; and Kwakernaak, Adriaan, to Fokker B.V. Pickling of aluminum. 4,397,721, Cl. 204-144.000.
Excello Speciality Company, The: *See*—
Jones, Wallace R., 4,397,261, Cl. 118-505.000.
Experimentalny Naucho-Issledovatelsky Institut Metallorezhuschikh*: *See*—
Bansevichus, Ramutis J.; Gapshis, Vladas-Algis A.; Kasparaitis, Albinas J.; Perfilov, Viktor V.; and Ragauskas, Alvidas J., 4,397,188, Cl. 73-651.000.
Exxon Production Research Co.: *See*—
Dawson, Charles R.; Li, Norman N.; and O'Brien, Dennis E., 4,397,354, Cl. 166-294.000.
Weiss, Richard T., 4,397,586, Cl. 405-217.000.
Exxon Research and Engineering Co.: *See*—
Luckenbach, Edward C., 4,397,816, Cl. 422-144.000.
Sheng, Ping, 4,398,056, Cl. 136-259.000.
Eyelematic Manufacturing Company: *See*—
Seebach, Henry F., Jr., 4,397,170, Cl. 72-68.000.
Fahey, Dennis M., to PPG Industries, Inc. Starch-containing treating composition for glass fibers and treated glass fibers and strands. 4,397,913, Cl. 428-369.000.
Fairchild Camera & Instrument Corporation: *See*—
Chu, Paul; and Klingensmith, James B., 4,398,244, Cl. 364-200.000.
Dyck, Rudolph H., 4,398,301, Cl. 377-60.000.
Fairey, Norman R.: *See*—
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Falck Schmidt Shipping ApS: *See*—
Schmidt, Mogens F., 4,397,479, Cl. 280-764.100.
Falcone, Samuel J.; and McCoy, John J., to Atlantic Richfield Company. Preparation of N-monosubstituted carbamates. 4,398,036, Cl. 560-24.000.
Fanti, Hansruedi, to Matra AG. Foam material body for a mattress, and element of furniture provided with same. 4,397,053, Cl. 5-481.000.
Fantuzzo, Joseph; and Capizzi-Gooding, Karen R., to Xerox Corporation. Toner dispensing apparatus. 4,397,409, Cl. 222-414.000.
Farkas, Ferenc: *See*—
Lorant, Ivan; Murlasits, Gyula; Wlasitsch, Gyula; Farkas, Ferenc; and Szomolanyi, Geza, 4,397,892, Cl. 427-245.000.
Farkas, Paul V.: *See*—
Hill, Edward T.; Kaplan, Bernard L.; and Farkas, Paul V., 4,397,983, Cl. 524-790.000.
Farnham, Charles J., to United States of America, Air Force. Survivable satellite bus structural frame. 4,397,434, Cl. 244-158.00R.
Farrar, Jack R.: *See*—
Pachmayr, Frank A.; and Farrar, Jack R., 4,397,109, Cl. 42-50.000.
Fathauer, George H.; and Holst, Wayne, to Masco Corporation. Scanning radio receiver including detector circuit for AM and FM reception. 4,398,304, Cl. 455-168.000.
Fats and Proteins Research Foundation, Inc.: *See*—
Boehme, Werner R., 4,397,681, Cl. 71-106.000.
Fatula, Joseph J., Jr.; and Garbarino, Paul L., to International Business Machines Corporation. FET Memory cell structure and process. 4,397,075, Cl. 29-571.000.
Faurholtz, Einar. Aero electro turbine. 4,398,096, Cl. 290-55.000.
Fearns, Peter: *See*—
Lyon, Robert C.; and Fearns, Peter, 4,397,436, Cl. 248-68.00R.
Fedotov, Vladimir M.: *See*—
Kanshin, Nikolai N.; Fedotov, Vladimir M.; Smirnov, Boris A.; and Guskov, Igor A., 4,397,311, Cl. 128-305.000.
Feger, Rolf: *See*—
Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, 4,398,073, Cl. 200-295.000.
Feigal, Donn L.; and Feigal, Ronald R. Ground circuit voltage detector. 4,398,188, Cl. 340-650.000.
Feigal, Ronald R.: *See*—
Feigal, Donn L.; and Feigal, Ronald R., 4,398,188, Cl. 340-650.000.
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, to Designs for Vision, Inc. Universal cable socket apparatus particularly adapted for use with fiber optic cables. 4,397,523, Cl. 350-96.200.
Feldman, Paul S.; Burge, Joseph C.; Radomski, Michael A.; and Tameo, Robert P., to General Electric Company. Rotary pressure seal structure and method for reducing thermal stresses therein. 4,397,471, Cl. 277-27.000.
Feldmann, Michel; Henaff, Jeannine; and Gabry, Andre, to L'Etat Francais. Elastic surface wave recursive filter. 4,398,163, Cl. 333-193.000.
Felice, Klaus M., to Oxidaciones Organicas, C.A. "OXIDOR". Supported catalyst for the preparation of phthalic anhydride. 4,397,768, Cl. 252-432.000.
Felt Products Mfg. Co.: *See*—
Czernik, Daniel E., 4,397,472, Cl. 277-235.00B.
Ferag Ag: *See*—
Eberle, Jurg, 4,397,456, Cl. 271-10.000.
Reist, Walter, 4,397,145, Cl. 59-78.000.
Ferdinand, Scott A., to Mattel, Inc. Circuit for producing musical tones. 4,397,211, Cl. 84-1.260.
Ferring Arzneimittel GmbH: *See*—
Eschweiler, Wilhelm; and Leyendecker, Gerhard, 4,397,639, Cl. 604-153.000.
Fiberfuge Company: *See*—
Wilson, Peter C.; and Berry, Eudore A., 4,397,638, Cl. 494-40.000.
Fickes, Michael G., to Du Pont de Nemours, E. I., and Company. Dry noneelectroscopic toners for toning tacky image surfaces. 4,397,941, Cl. 430-331.000.
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., to Telease, Inc. Multiple signal transmission method and system, particularly for television. 4,398,216, Cl. 358-121.000.
Fields, Fred W., to Coe Manufacturing Co., The. Log scanning in veneer lathe to determine optimum yield axis. 4,397,343, Cl. 144-209.00A.
Filipchenko, Gennady G.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.
Finch, Robert A., to CBS Inc. Rhythm sound generator. 4,397,210, Cl. 84-1.030.
Findeisen, Andrew M. Tape cassette container. 4,397,389, Cl. 206-387.000.
Fink, Arthur C., Jr., to Husky Corporation. Poppet valve means. 4,397,447, Cl. 251-356.000.
Fink, Carl E., to Conco Inc. Technique and apparatus for solids circulation control in the solids circulating boiler. 4,397,267, Cl. 122-4.00D.
Fink, John J.: *See*—
Friesen, Orlando H.; and Fink, John J., 4,397,590, Cl. 405-271.000.
Finkelshtein, Evgenia G.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.
Firth, Bruce E., to UOP Inc. Preparation of 2,4,6-trialkylphenols. 4,398,048, Cl. 568-781.000.
Fischer, Artur. Guiding element for toy vehicles. 4,397,419, Cl. 238-10.00F.
Fischer, Hermann, to Man-Roland Druckmaschinen Aktiengesellschaft. Multi-printing mode rotary printing machine. 4,397,235, Cl. 101-141.000.
Fischer, Peter: *See*—
Schwartz, Werner; and Fischer, Peter, 4,397,688, Cl. 75-77.000.
Fischer & Porter Company: *See*—
Ryan, Matthew C.; and Soltz, Daniel J., 4,397,193, Cl. 73-861.280.
Soltz, Daniel J., 4,397,194, Cl. 73-861.280.
Fisher, Charles B.; and Fisher, Sidney T. Magnetic brakes and clutches. 4,397,381, Cl. 192-84.00T.
Fisher, Leonard A., to Carlin Company, The. Pre-mix forced draft power gas burner. 4,397,631, Cl. 431-114.000.
Fisher, Richard W.; and Cristell, Frank A., to Cristell, Frank A. Cable supporting and spacing device. 4,397,435, Cl. 248-61.000.
Fisher, Sidney T.: *See*—
Fisher, Charles B.; and Fisher, Sidney T., 4,397,381, Cl. 192-84.00T.
Fisons Limited: *See*—
Geering, Quinton A., 4,397,859, Cl. 424-272.000.
Fitzgerald, John E.: *See*—
Craig, Robert J. G.; Imbault, James J.; and Fitzgerald, John E., 4,397,185, Cl. 73-504.000.
Flamm, Daniel L.: *See*—
Donnelly, Vincent M.; Flamm, Daniel L.; and Ibbotson, Dale E., 4,397,711, Cl. 156-643.000.
Fleige, Wolfgang: *See*—
Goyert, Wilhelm; Fleige, Wolfgang; Hoppe, Hans-Georg; and Wagner, Hans, 4,397,974, Cl. 524-143.000.
Fleming, Raymond T.: *See*—
Kohl, Clyde B.; and Fleming, Raymond T., 4,398,124, Cl. 315-74.000.
Flinchbaugh, David E.; Hill, Raymond R.; Shaffer, Robert; and Wagner, Thomas R., to Westinghouse Electric Corp. Harmonic electric actuator. 4,398,110, Cl. 310-83.000.
Flonic S.A.: *See*—
Mollet, Jean-Paul, 4,397,192, Cl. 73-861.220.
Flower, Ralph F. J. Finishing of annular articles. 4,398,078, Cl. 219-69.00M.
Fluckiger, Raymond W.: *See*—
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Fluid Devices Limited: *See—*
Larner, Donald A., 4,397,614, Cl. 417-403.000.
FMC Corporation: *See—*
Darecchio, Andrea, 4,397,814, Cl. 422-111.000.
Focht, Harry, to Paul Troester Maschinenfabrik. Apparatus for the dry crosslinking of strands of elastomers. 4,397,815, Cl. 422-128.000.
Fokker B.V.: *See—*
Exalto, Robertus; and Kwakernaak, Adriaan, 4,397,721, Cl. 204-144.000.
Folkerts, Charles H., to General Motors Corporation. Retractable engine igniter. 4,397,273, Cl. 123-145.00A.
Ford Motor Company: *See—*
Evans, William J.; and Haddad, Charles, 4,397,490, Cl. 293-120.000.
Fouts, Norman G., 4,397,452, Cl. 267-8.00R.
Holubka, Joseph W., 4,398,011, Cl. 528-45.000.
Hughes, Joseph L., 4,397,278, Cl. 123-440.000.
Strasser, Robert A.; and Goch, Stephen W., 4,397,596, Cl. 413-6.000.
Stribling, John L., 4,397,187, Cl. 73-589.000.
Suh, Sang-Kee; Hauser, Gotz S.; and Johnson, Harry T., 4,397,171, Cl. 72-348.000.
Vong, Sandy T. S., 4,397,671, Cl. 65-60.520.
Fordeck, William A. Tool for cutting openings. 4,397,593, Cl. 409-179.000.
Forden, Christopher A. Liquid velocity measurement system. 4,397,191, Cl. 73-861.180.
Formica, Val A. Rotatable mascara applicator. 4,397,326, Cl. 132-88.500.
Formosa, Edward A., Jr., to GTE Automatic Electric Labs Inc. Call-for-service and continuity sensor circuit. 4,398,064, Cl. 179-18.0AH.
Forster, Daniel: *See—*
Benoit-Gonin, Roger; Berger, Jean-Luc; Coutures, Jean-Louis; Forster, Daniel; and Picquendar, Jean-Edgar, 4,398,099, Cl. 307-246.000.
Fort, Jacob R.: *See—*
Phelan, Charles S.; and Fort, Jacob R., 4,397,186, Cl. 73-584.000.
Fouilloy, Jean-Pierre, to U.S. Philips Corporation. Device for detecting a hot point in a scene by means of infrared radiation and missile guidance system equipped with such a device. 4,397,429, Cl. 244-3.110.
Fouse, Scott D.: *See—*
Nussmeier, Thomas A.; and Fouse, Scott D., 4,398,256, Cl. 364-515.000.
Fouss, James L.; Cook, Michael L.; and Hassan, Worthy O., to Hancor, Inc. Apparatus for inserting foldable conduit below ground. 4,397,585, Cl. 405-183.000.
Fouts, Norman G., to Ford Motor Company. Hydro-mechanical stop for a shock absorber. 4,397,452, Cl. 267-8.00R.
Foxboro Company, The: *See—*
Vroom, Theo, 4,397,958, Cl. 436-141.000.
Foxcroft Associates: *See—*
Robinson, Thomas C.; and Kitrilakis, Sotiris, 4,397,049, Cl. 3-1.700.
Frait, John S., to Kelsey-Hayes Co. Electric controller having output power limiting circuit. 4,398,252, Cl. 364-426.000.
Frank, Jurgen: *See—*
Pickard, Jurgen; and Frank, Jurgen, 4,397,621, Cl. 418-236.000.
Frantz, Gene A.: *See—*
Lin, Kun-Shan; Goudie, Kathleen M.; and Frantz, Gene A., 4,398,059, Cl. 179-1.0SM.
Frantz, Robert H.: *See—*
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,397,511, Cl. 339-17.0CF.
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,397,513, Cl. 339-91.00R.
Frantzen, John J., to Koltron Corporation. Etching and etchant removal apparatus. 4,397,708, Cl. 156-345.000.
Franz, Arnold; Schneider, Ernst; and Jakobshagen, Gregor, to Dynamit Nobel Aktiengesellschaft. Process for the production of hard paper. 4,397,882, Cl. 427-391.000.
Franz, Klaus L., to Applied Geomechanics, Inc. Method and apparatus for zeroing a tilt meter mechanism. 4,397,098, Cl. 33-304.000.
Frazer, August H., to Du Pont de Nemours, E. I., and Company. Fiber-forming polyesters of aromatic ketohydroxy acids. 4,398,015, Cl. 528-125.000.
Frediani, John K.; Johnson, Richard E.; and Lillie, Terrance L., to Pitney Bowes Inc. Word processing system employing a plurality of general purpose processor circuits. 4,398,246, Cl. 364-200.000.
Freedman, George; and Derby, Palmer P., to Raytheon Company. Microwave cooking utensil. 4,398,077, Cl. 219-10.55E.
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Freytag, Arthur H., to Great Western Sugar Company, The. Heat treatment of active dried yeast and product thereof. 4,397,877, Cl. 426-11.000.
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Friesen, Henry; and Rosbak, John, to Deere & Company. Regenerative valve. 4,397,221, Cl. 91-420.000.
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Leutwyler, Robert, 4,397,251, Cl. 112-277.000.
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Kuhle, Engelbert; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,397,869, Cl. 424-324.000.
Fuchs, Paul-Wilhelm: *See—*
Doetsch, Werner; and Fuchs, Paul-Wilhelm, 4,397,833, Cl. 423-581.000.
Fuji Photo Film Co., Ltd.: *See—*
Akashi, Goro; and Fujiyama, Masaaki, 4,397,911, Cl. 428-323.000.
Ishiguro, Shoji; Fuseya, Yoshiharu; Heki, Tatsuo; and Mitsui, Akio, 4,397,943, Cl. 430-609.000.
Sato, Masamichi; Hasegawa, Eiichi; and Shimanuki, Koji, 4,397,928, Cl. 430-7.000.
Terashita, Takaaki, 4,397,545, Cl. 355-77.000.
Fuji Photo Optical Co., Ltd.: *See—*
Yajima, Toshiyuki; and Kimura, Syuzo, 4,397,544, Cl. 355-58.000.
Fuji Xerox Co., Ltd.: *See—*
Kanazawa, Yukio, 4,397,540, Cl. 355-14.00R.
Fujimori, Yoshinori: *See—*
Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, 4,397,923, Cl. 427-162.000.
Fujioka, Yoshiki: *See—*
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Teraji, Tsutomu; Oku, Teruo; and Shiokawa, Youichi, 4,397,849, Cl. 424-246.000.
Fujita, Akira, to Hitachi, Ltd. Data processing system having an instruction pipeline for processing a transfer instruction. 4,398,245, Cl. 364-200.000.
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Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,398,138, Cl. 318-603.000.
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Toyoda, Kazuhiro, 4,398,268, Cl. 365-190.000.
Fujiwara, Kazuo: *See—*
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Fukaya, Masaki: *See—*
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Fukushima, Yasuhiro, to Kabushiki Kaisha Daini Seikosha. Micro stepping motor. 4,398,107, Cl. 310-49.00R.
Fuller, John M., to Drilling & Service U.K. Limited. Rotary drill bits and method of use. 4,397,363, Cl. 175-410.000.
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Nojiri, Akio; Koreeda, Toshio; and Horiguch, Masao, 4,397,797, Cl. 264-45.500.
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Nojiri, Akio; Koreeda, Toshio; and Horiguch, Masao, 4,397,797, Cl. 264-45.500.
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Ishiguro, Shoji; Fuseya, Yoshiharu; Heki, Tatsuo; and Mitsui, Akio, 4,397,943, Cl. 430-609.000.
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Nakamura, Iwao, 4,397,094, Cl. 33-181.00R.
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Kubota, Takao; and Kusakai, Shigenobu, 4,398,007, Cl. 526-273.000.
G. D. Searle & Co.: *See—*
Marsheck, William J.; Jiu, James; and Wang, Ping T., 4,397,947, Cl. 435-58.000.
Gable, Derek J., to Mattel, Inc. Flexible strip with rolling and bending means. 4,397,465, Cl. 273-86.00D.
Gabry, Andre: *See—*
Feldmann, Michel; Henaff, Jeannine; and Gabry, Andre, 4,398,163, Cl. 333-193.000.
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Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., 4,397,579, Cl. 404-60.000.

Galves, Jean-Pierre; and Gutierrez, Jean-Marie, to Thomson - CSF. X-Ray image intensifier. 4,398,118, Cl. 313-527.000.

Gamba, Gregory G. Apparatus for automatically cancelling a turn signal. 4,398,175, Cl. 340-73.000.

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Ganshaw, Samuel H. Body surfing shirt. 4,397,636, Cl. 441-65.000.

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Fatula, Joseph J., Jr.; and Garbarino, Paul L., 4,397,075, Cl. 29-571.000.

Gardner, William J., to Stanadyne, Inc. Semi-self-contained hydraulic lash adjuster. 4,397,271, Cl. 123-90.550.

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Place, Theodore W., 4,397,637, Cl. 494-1.000.

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Podhrasky, Robert J., 4,398,104, Cl. 307-490.000.

Gatewood, George D., to University of Pittsburgh. Apparatus for processing electromagnetic radiation and method. 4,397,559, Cl. 356-404.000.

Gaucher, Edwin; Desbiens, Rejean; and Desbiens, Regis. Electronic apparatus for measuring the difference of elevation between two points. 4,397,099, Cl. 33-367.000.

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Jahn, Dieter, 4,397,199, Cl. 74-422.000.

Geering, Quinton A., to Fisons Limited. Insecticide. 4,397,859, Cl. 424-272.000.

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Boutni, Omar M.; and Liu, Ping Y., 4,397,982, Cl. 524-493.000.
Feldman, Paul S.; Burge, Joseph C.; Radomski, Michael A.; and Tameo, Robert P., 4,397,471, Cl. 277-27.000.
Johnson, Donald S., 4,398,013, Cl. 528-89.000.
Levinson, Lionel M., 4,397,775, Cl. 252-518.000.
May, John E., 4,397,773, Cl. 252-518.000.
McFadyen, Robert J.; Peil, William; Davenport, John M.; and Crosby, Robert J., 4,398,130, Cl. 315-226.000.
Meier, Raymond J., 4,398,200, Cl. 343-756.000.
Premerlani, William J., 4,398,255, Cl. 364-492.000.
Rickard, Jimmy R., 4,397,101, Cl. 34-30.000.
Scott, Steven W.; and Vaughn, Howard A., Jr., 4,397,973, Cl. 524-114.000.
Stockton, William W.; and Hutto, Walter D., Jr., 4,397,148, Cl. 60-223.000.
Tassie, Douglas P., 4,397,216, Cl. 89-33.0CA.
Van Deursen, Gary E., 4,397,526, Cl. 350-310.000.

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Hudak, Stephen F., 4,397,873, Cl. 426-385.000.
Parliment, Thomas H.; and Herzing-Giordano, Denise A., 4,397,876, Cl. 426-534.000.

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Folkerts, Charles H., 4,397,273, Cl. 123-145.00A.
Haka, Raymond J.; and Stoltman, Donald D., 4,397,289, Cl. 123-571.000.
Lutz, Phillip A.; Motz, Phillip R.; and Sayers, Eugene H., 4,398,235, Cl. 361-393.000.

Georgia-Pacific Corporation: *See*—
McDonald, Roderick A., 4,397,967, Cl. 523-145.000.

Geratz, Joachim D.: *See*—
Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., 4,397,863, Cl. 424-274.000.

Gerber, Bernard R.: *See*—
Pardes, Greg; Berger, Richard F.; and Gerber, Bernard R., 4,397,132, Cl. 53-471.000.

Gerlach, Ronald R.: *See*—
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., 4,398,216, Cl. 358-121.000.

Gerry, Martin E. Force field anti-noise-induction system. 4,398,125, Cl. 315-86.000.

Gersonde, Klaus: *See*—
Weiner, Murray; and Gersonde, Klaus, 4,397,846, Cl. 424-199.000.

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Habicht, Siegfried; and Gerss, Heinz, 4,397,116, Cl. 49-501.000.

Gerth, Dieter; Schatz, Friedrich; and van Hove, Cornelius, to Kabelmetal Electro GmbH. Moisture-proofing electrical cable. 4,398,058, Cl. 174-106.00D.

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Eloy, Jean-Francois; and Unsold, Eberhard, 4,398,090, Cl. 250-299.000.

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Bakel, Izhak, 4,397,676, Cl. 71-86.000.

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Muller, Ernst, 4,397,339, Cl. 139-1.00C.

Getzlaff, Klaus J.: *See*—
Bazlen, Dieter; Bock, Dietrich W.; Getzlaff, Klaus J.; Hajdu, Johann; and Painke, Helmut, 4,398,247, Cl. 364-200.000.

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Janicki, Max; Liefke, Hans-Georg; Keil, Reinhart; and Geyer, Gerd, 4,398,137, Cl. 318-601.000.

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Pasierb, John J., Jr.; and Ghosh, Atish, 4,398,189, Cl. 340-721.000.

GHT Gesellschaft fur Hochtemperaturreaktor-Technik mbH: *See*—
Hesse, Klaus, 4,397,818, Cl. 422-312.000.

Gillies, George M.: *See*—
Butler, Gregg G.; Gillies, George M.; Heal, Thomas J.; and Littlechild, James E., 4,397,824, Cl. 423-260.000.

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Gillion, John W., to UMC Industries, Inc. Method of heating food. 4,397,875, Cl. 426-523.000.

Gimenez-Coronado, Manuel: *See*—
Jacquin, Yves; Dinh, Chan T.; Gimenez-Coronado, Manuel; and Cosyns, Jean, 4,397,739, Cl. 208-210.000.

Gingerich, Richard G. W.: *See*—
Vanderpool, Clarence D.; Martin, Brice E.; and Gingerich, Richard G. W., 4,397,690, Cl. 75-108.000.

Gisler, Roland: *See*—
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,397,844, Cl. 424-177.000.

Giusto, Anthony: *See*—
Pergande, Michael W.; and Giusto, Anthony, 4,397,393, Cl. 206-549.000.

Givens, Edwin N.: *See*—
Hoover, David S.; and Givens, Edwin N., 4,397,732, Cl. 208-8.0LE.

Glaze, Stanley G. Fluid powered actuator system. 4,397,222, Cl. 91-515.000.

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Shear, William F., 4,397,175, Cl. 72-453.020.

Glover, Edward B.: *See*—
McRae, Daniel D.; Perkins, Frank A.; and Glover, Edward B., 4,398,062, Cl. 179-1.50E.

Go, Santos W., to Owens-Illinois, Inc. Copolyesters. 4,398,017, Cl. 528-173.000.

Goch, Stephen W.: *See*—
Strasser, Robert A.; and Goch, Stephen W., 4,397,596, Cl. 413-6.000.

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Beaumont, Gregory J.; Godawski, Theodore J.; McShane, James P.; and Parker, James J., 4,398,133, Cl. 315-411.000.

Goddard, Vaughan P.; and Le Maitre, Richard B. C., to AECI Limited. Production of sheet material. 4,397,909, Cl. 428-252.000.

Godfrey, Philip D. Control device for hydraulic spool valves. 4,397,336, Cl. 137-636.200.

Goergen, Rene; and Kind, Guy J., to Goodyear Tire & Rubber Company, The. Tread for heavy-duty radial tires. 4,397,344, Cl. 152-209.00R.

Goff, Willie, Jr.; and Jenkins, William M., to International Business Machines Corporation. Method of manufacture of a multi-wire non-impact printhead. 4,397,085, Cl. 29-850.000.

Gohbara, Masatoshi: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,397,864, Cl. 424-282.000.

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Winkler, Louis T.; Goins, John D.; St. Pierre, George R.; Mobley, Carroll E.; and Shumaker, Craig B., 4,397,686, Cl. 75-63.000.

Golbeck, Bernard J.: *See*—
Danielson, David J.; and Golbeck, Bernard J., 4,398,074, Cl. 200-302.000.

Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., to Columbia Chase Corporation. Expansion joint structures. 4,397,579, Cl. 404-60.000.

Goldstein, Gideon; and Heavner, George, to Ortho Pharmaceutical Corporation. Peptides having thymopoietin-like activity. 4,397,842, Cl. 424-177.000.

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Goergen, Rene; and Kind, Guy J., 4,397,344, Cl. 152-209.00R.

Gordon, Marvin, to Whitman Medical Corporation. Catheter stabilization fitting having a snap-over cover. 4,397,647, Cl. 604-180.000.

Gordon, Stanley E.: *See*—
Wilbur, Lawrence A.; and Gordon, Stanley E., 4,397,439, Cl. 248-292.100.

Gordy, John, to New Fibers International. Semi-chemical pulping process. 4,397,712, Cl. 162-19.000.
Gossalter, Rene, to Swisscal Holding S.A. Flow guiding in tube bundle heat exchangers. 4,397,350, Cl. 165-159.000.
Gosset, Philippe, to Thomson-CSF. Multistage depressed collector for microwave tube. 4,398,122, Cl. 315-5.380.
Gott, Geoffrey F.; Doany, Paul; and Sepehri, Majid. Communication systems. 4,398,296, Cl. 375-1.000.
Gotzmer, Carl: *See*—
Johnson, Nancy C.; Gotzmer, Carl; and Graff, Mark, 4,397,700, Cl. 149-7.000.
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Koren, David H.; Kirby, Allan B.; and Gould, Donald H., 4,397,516, Cl. 339-177.00R.
Gowan, William L.; and Wadkins, Charles K., to Lucas Industries Limited. Flowline degaser. 4,397,659, Cl. 55-41.000.
Goyert, Wilhelm; Fleige, Wolfgang; Hoppe, Hans-Georg; and Wagner, Hans, to Bayer Aktiengesellschaft. Low-halogen-content, thermoplastic polyurethane elastomer having improved flame resistance by the addition of a 4-component additive combination, its production and its use. 4,397,974, Cl. 524-143.000.
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Lorant, Ivan; Murlasits, Gyula; Wlasitsch, Gyula; Farkas, Ferenc; and Szomolanyi, Geza, 4,397,892, Cl. 427-245.000.
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Graco Inc.: *See*—
Krohn, Duane D., 4,397,610, Cl. 417-44.000.
Gradco/Dendoki, Inc.: *See*—
DuBois, R. Clark; and Hamma, John C., 4,397,461, Cl. 271-293.000.
Graff, Mark: *See*—
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Grafton, David A.: *See*—
Antos, Ronald L.; Brueggemann, Harry P.; and Grafton, David A., 4,397,521, Cl. 350-6.800.
Graham, Anne M.: *See*—
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Grant, Barbara D.: *See*—
Cheng, Ying Y.; Grant, Barbara D.; Pederson, Lester A.; and Willson, Carlton G., 4,398,001, Cl. 525-502.000.
Grasselli, Robert K.; and Suresh, Dev D., to Standard Oil Co., The. Oxidation catalysts. 4,397,771, Cl. 252-467.000.
Grassl, Hans-Peter, to Siemens Aktiengesellschaft. Lens module for an opto-electronic range finder. 4,397,547, Cl. 356-1.000.
Gray, Daniel W.: *See*—
Green, William L.; Calkins, Dennis E.; Landers, Edward A., Jr.; and Gray, Daniel W., 4,397,582, Cl. 405-137.000.
Great Western Sugar Company, The: *See*—
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Green, George E.; Irving, Edward; and Stark, Bernard P., to Ciba-Geigy Corporation. Sulfoxonium salts and their use as polymerization catalysts. 4,398,014, Cl. 528-89.000.
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Millmaster Onyx Group, Inc. Water treatment method. 4,397,743, Cl. 210-735.000.
Green, William L.; Calkins, Dennis E.; Landers, Edward A., Jr.; and Gray, Daniel W., to McDermott Incorporated. Method of creating a cold water conduit to be used in ocean thermal energy conversion systems. 4,397,582, Cl. 405-137.000.
Gregorian, Razmic S.; and Namboodri, Chettoor G., to United Merchants & Manufacturers, Inc. Textile dyeing process. 4,397,650, Cl. 8-477.000.
Greiner, Harry M.; Holl, Roland; Neberle, Klaus; and Abendroth, Paul, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Inking unit with traversing ink rollers. 4,397,236, Cl. 101-350.000.
Griffin, Brian P.: *See*—
Cox, Michael K.; and Griffin, Brian P., 4,398,019, Cl. 528-183.000.
Groman, Ernest V.; and Cabelli, Michael D., to Baxter Travenol Laboratories, Inc. Preparation of xanthine tracers. 4,397,779, Cl. 260-112.50R.
Grosjean, Jean-Claude, to Institut de Recherches de la Siderurgie Francaise Irsid. Process for pneumatic stirring of a bath of molten metal. 4,397,684, Cl. 75-59.000.
Grosse, Jurgen: *See*—
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Grover, Thomas P.: *See*—
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Gruber, Wolfgang: *See*—
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Gruen, Dieter M.: *See*—
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Gruger, Bernd: *See*—
Schelinski, Siegfried; Patzig, Dieter; Heinrich, Klaus; and Gruger, Bernd, 4,397,668, Cl. 65-30.140.
Grychtol, Klaus: *See*—
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GTE Products Corporation: *See*—
Benjamin, Mary Lou; Dobbs, Robert J.; and Shaffer, Mary E., 4,397,889, Cl. 427-221.000.
de Vos, Hendrik A. J.; and Sitzema, Ronald L., Jr., 4,398,239, Cl. 362-263.000.
Dodds, Robert E.; and Harrigan, David J., 4,398,119, Cl. 313-466.000.
Hall, Harold H., Jr.; and Bouchard, Andre C., 4,397,803, Cl. 264-272.150.
Kohl, Clyde B.; and Fleming, Raymond T., 4,398,124, Cl. 315-74.000.
Vanderpool, Clarence D.; Martin, Brice E.; and Gingerich, Richard G. W., 4,397,690, Cl. 75-108.000.
GTI Corporation: *See*—
North, Paul C., 4,397,602, Cl. 414-415.000.
Guala, Gennaro: *See*—
Rio, Arturo; Guala, Gennaro; and Biagini, Stefano, 4,397,263, Cl. 118-643.000.
Guazzone, Bruno; and Muller, Felix, to Process Engineering Company S A. Method and apparatus for anaerobic fermentation. 4,397,953, Cl. 435-243.000.
Gudden, Gerardus J. W. H.: *See*—
Cornelissens, Emery G. P.; and Gudden, Gerardus J. W. H., 4,397,391, Cl. 206-526.000.
Guignard, Paul C.: *See*—
Ream, Michael D.; and Guignard, Paul C., 4,397,373, Cl. 182-17.000.
Guillon, Jean Pierre, to Thomson-CSF. Direct current supply particularly for cathode ray tube. 4,398,120, Cl. 315-1.000.
Guimarin Container Co., Incorporated: *See*—
Guimarin, Henry L., 4,397,403, Cl. 220-269.000.
Guimarin, Henry L., to Guimarin Container Co., Incorporated. Container opening apparatus with captured tab. 4,397,403, Cl. 220-269.000.
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Galves, Jean-Pierre; and Gutierrez, Jean-Marie, 4,398,118, Cl. 313-527.000.
Guttman, Milton. Free-wheeling latching system. 4,397,487, Cl. 292-202.000.
Gwyn, Marion V. Full spectrum selective color producing and spraying device. 4,397,422, Cl. 239-307.000.
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Cain, David E., 4,397,177, Cl. 73-61.400.

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Dettmer, Gerhard; and Hammerschmidt, Peter, 4,397,905, Cl. 428-180.000.

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Hampel, Wilbur J., to Toro Company, The. Power equipment unit with split handle. 4,397,088, Cl. 30-296.00R.

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Fouss, James L.; Cook, Michael L.; and Hassan, Worthy O., 4,397,585, Cl. 405-183.000.

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Christensen, Burton G.; Hannah, John; Leanza, William J.; and Shih, David H., 4,397,861, Cl. 424-274.000.

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Draheim, Peter; and Hapke, Friedrich, 4,398,146, Cl. 324-73.00R.

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Kay, Christopher G.; and Lanning, John M., 4,397,396, Cl. 212-189.000.

Harrell, David M., to Westinghouse Electric Corp. Fluid control system. 4,397,334, Cl. 137-624.110.

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Harris, Alva F., to Monsanto Company. Heat stabilized polymers. 4,397,975, Cl. 524-155.000.

Harris Corporation: *See*—
Beasom, James D., 4,398,142, Cl. 323-226.000.
Levine, David A., 4,398,259, Cl. 364-551.000.
McRae, Daniel D.; Perkins, Frank A.; and Glover, Edward B., 4,398,062, Cl. 179-1.50E.
Merwarth, Richard J.; and McGinnis, Joseph P., 4,397,229, Cl. 100-7.000.

Harris, Monty E., to Dow Chemical Company, The. Packer tool for use in a wellbore. 4,397,351, Cl. 166-134.000.

Harris, Robert F.: *See*—
Tefertiller, Nancy B.; and Harris, Robert F., 4,397,993, Cl. 525-328.200.

Harris, Walter W., to Manville Service Corporation. Cooling tubes for glass filament production apparatus. 4,397,665, Cl. 65-12.000.

Harrison, Anthony W., to Lucas Industries Limited. High pressure hydraulic systems. 4,397,477, Cl. 280-709.000.

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Harth, Helmut: *See*—
Raaf, Helmut; Harth, Helmut; and Wagner, Helmar R., 4,397,837, Cl. 424-51.000.

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Harvey, Donald M., to Eastman Kodak Company. Film threading apparatus. 4,397,535, Cl. 354-212.000.

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Sato, Masamichi; Hasegawa, Eiichi; and Shimanuki, Koji, 4,397,928, Cl. 430-7.000.

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Takisawa, Yukihisa; and Hasegawa, Shinichi, 4,398,047, Cl. 568-766.000.

Hass, Ronald J.; and Hunnicutt, Charles F. Mobile telephone interoffice handoff limiting method and apparatus. 4,398,063, Cl. 179-2.0EB.

Hassan, Worthy O.: *See*—
Fouss, James L.; Cook, Michael L.; and Hassan, Worthy O., 4,397,585, Cl. 405-183.000.

Hatch, Gilbert J., to Xerox Corporation. Electrostatic image development system having tensioned flexible recording member. 4,397,264, Cl. 118-656.000.

Hatz, Ernst, to Motorenfabrik Hatz GmbH & Co. KG. Internal combustion engine with a circulating cooling medium. 4,397,269, Cl. 123-41.330.

Hauden, Daniel: *See*—
Gagnepain, Jean-Jacques; Hauden, Daniel; Coquerel, Roger; and Pegeot, Claude, 4,398,115, Cl. 310-313.00A.

Haug, Erich; and Storz, Siegbert, to Uteh and Haug GmbH. Instrument for irrigation of a surgical site. 4,397,640, Cl. 604-33.000.

Hauser, Gotz S.: *See*—
Suh, Sang-Kee; Hauser, Gotz S.; and Johnson, Harry T., 4,397,171, Cl. 72-348.000.

Haverkamp, Antonius P.; and Kerkhof, Klaas W., to U.S. Philips Corporation. Device for rendering a cable longitudinally watertight. 4,397,624, Cl. 425-113.000.

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Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,397,511, Cl. 339-17.0CF.
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,397,513, Cl. 339-91.00R.

Hawley, Gil R.; and McDaniel, Max P., to Phillips Petroleum Company. Solubilized chromium salt in particulate support. 4,397,766, Cl. 252-431.00R.

Hayashi, Masaki. Resistance thermometer element. 4,398,169, Cl. 338-25.000.

Hayashida, Tsutomu, to Nissan Motor Company, Limited. Two-shift throttle control system for automotive internal combustion engine. 4,397,276, Cl. 123-342.000.

Haylock, John C.: *See*—
Merrill, Robert G.; Lofquist, Robert A.; Weedon, Gene C.; Haylock, John C.; and Twilley, Ian C., 4,398,012, Cl. 528-84.000.

Hayman, Dennis J., to United States Brass Corporation. Mixing valve for back to back installation. 4,397,330, Cl. 137-270.000.

Hayward, Terence J., to HNL Instruments & Controls Limited. Flow sensing devices. 4,397,195, Cl. 73-861.740.

Heal, Thomas J.: *See*—
Butler, Gregg G.; Gillies, George M.; Heal, Thomas J.; and Littlechild, James E., 4,397,824, Cl. 423-260.000.

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Smith, Richard H., 4,397,370, Cl. 180-210.000.

Hearn, Anthony R.: *See*—
Dickie, Hugh G.; Hearn, Anthony R.; and Heath, John S., 4,398,167, Cl. 335-272.000.

Hearst, John E.: *See*—
Bender, Dean R.; Hearst, John E.; and Rapoport, Henry, 4,398,031, Cl. 549-282.000.

Heath, John S.: *See*—
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Hechemy, Karim E., to Research Corporation. Forced precipitation method for preparing antigen/antibody particles. 4,397,959, Cl. 436-509.000.

Hedin, Raymond C.; and Amundson, Dennis L., to Sperry Corporation. MNOS Over-write protection circuitry. 4,398,269, Cl. 365-195.000.

Heidel, Peter: *See*—
Porrmann, Herbert; Heidel, Peter; and Stenger, Karl, 4,397,337, Cl. 138-118.100.

Heidemann, Luder, to Siemens Aktiengesellschaft. Apparatus for determining the position of a switch and for monitoring the associated line for interruptions and short circuits. 4,398,144, Cl. 324-51.000.

Heidmann, Richard; and Crapiz, Dino, to Societe Europeenne de Propulsion. Simplified homing system for a missile of the shell or rocket type. 4,397,430, Cl. 244-3.160.

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Chesebro, Robert E., Jr.; and Heinig, Richard H., 4,397,161, Cl. 66-178.00A.

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Schelinski, Siegfried; Patzig, Dieter; Heinrich, Klaus; and Gruger, Bernd, 4,397,668, Cl. 65-30.140.

Heisig, Rolf; Klein, Hans-Hermann; and Volker, Karl-Heinz, to Leybold Heraeus GmbH. Displacer for low-temperature refrigerating machines. 4,397,156, Cl. 62-6.000.

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Ishiguro, Shoji; Fuseya, Yoshiharu; Heki, Tatsuo; and Mitsui, Akio, 4,397,943, Cl. 430-609.000.

Hellmer, Ernest W.; and Bartimes, George F., to Continental Group, Inc., The. In-mold labelier. 4,397,625, Cl. 425-135.000.

Helm, James H., to RCA Corporation. Apparatus for molding a recorded disc. 4,397,627, Cl. 425-290.000.

Henaff, Jeannine: *See*—
Feldmann, Michel; Henaff, Jeannine; and Gabry, Andre, 4,398,163, Cl. 333-193.000.

Henderson, John G. N.: *See*—
Chin, Danny; Henderson, John G. N.; and Maturo, Robert J., 4,398,303, Cl. 455-168.000.

Henderson, Kenneth J., to Bryans Southern Instruments Ltd. Writing devices for plotting and recording apparatus. 4,398,202, Cl. 346-29.000.

Henningsen, Christian J.: *See*—
Johansson, Jan G.; Henningsen, Christian J.; and Koster, Arvo, 4,398,080, Cl. 219-130.100.

Henry, Carl: *See*—
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Hensley, Dean: *See*—
Johnson, Sander K.; Murphy, Tim; Hensley, Dean; and Sallon, Ronald, 4,397,701, Cl. 156-62.000.

Hepburn, George R., to Therapeutic Appliances, Inc. Adjustable splint. 4,397,308, Cl. 128-88.000.

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Schulke, Karl A., 4,397,897, Cl. 428-35.000.

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Takeda, Shinichi; Nonobe, Masao; Ishida, Kenji; Omoto, Yorihiko; and Anno, Tatsuro, 4,398,037, Cl. 560-77.000.

Herr, James E., to Kerr Glass Manufacturing Corporation. Moisture tight closure and container systems. 4,397,397, Cl. 215-211.000.

Herwig, Thomas; and Struss, Ortwin, to Heimann GmbH. Optical arrangement for a light scattering type smoke detector. 4,397,557, Cl. 356-342.000.

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Parliment, Thomas H.; and Herzing-Giordano, Denise A., 4,397,876, Cl. 426-534.000.

Hesse, Klaus, to GHT Gesellschaft fur Hochtemperaturreaktor-Technik mbH. Cracking tube apparatus having molded or shaped catalyst bodies. 4,397,818, Cl. 422-312.000.

Hettinga, Siebolt. Method and apparatus for mold injection. 4,397,806, Cl. 264-328.140.

Hettinger, Fredric L., to Vetco Offshore, Inc. Disconnectable production riser assembly. 4,397,357, Cl. 166-345.000.

Heyer, Steven R.: *See*—
Bankert, Neil R.; Heyer, Steven R.; and Viele, Lawrence, Jr., 4,397,184, Cl. 73-432.00R.

Hibell, Ernest G.; and West, Raymond, to Lucas Industries Limited. Electromagnetic horn. 4,398,182, Cl. 340-388.000.

Hibi, Takuo: *See*—
Araki, Masashi; Hibi, Takuo; Kawabe, Tomofumi; and Yamahara, Takeshi, 4,398,051, Cl. 585-640.000.

Hickey, Richard C., to Docutel Corporation. Document dispenser with escrow system. 4,397,455, Cl. 271-3.100.

Hickman, Albert F., to A. F. Hickman Associates, Inc. Convertible highway railroad vehicle. 4,397,243, Cl. 105-159.000.

Higashimoto, Takenobu: *See*—
Yoshimura, Kozo; Higashimoto, Takenobu; and Ono, Tetsuji, 4,397,524, Cl. 350-96.250.

Higgins, Kenneth B., to Milliken Research Corporation. Magnetic carpet tile. 4,397,900, Cl. 428-95.000.

Highbridge, Russell E.: *See*—
Milanes, Eddy J.; Highbridge, Russell E.; and Morgan, Robert S., 4,397,460, Cl. 271-263.000.

Hilbert, Peter: *See*—
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Hill, Edward T.; Kaplan, Bernard L.; and Farkas, Paul V., to Aerofoam Industries Proprietary Limited; and Polyeth Marketing Proprietary Limited. Process for the production of polyurethane polymer compositions. 4,397,983, Cl. 524-790.000.

Hill, Henry A.; and Ballard, Paul T., to University of Arizona Foundation, The. System for reducing the effects of background radiation. 4,397,558, Cl. 356-354.000.

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Flinchbaugh, David E.; Hill, Raymond R.; Shaffer, Robert; and Wagner, Thomas R., 4,398,110, Cl. 310-83.000.

Hilliard-Lyons Patent Management, Inc.: *See*—
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Hinch, John A.: *See*—
Neill, Authur H., Jr.; and Hinch, John A., 4,397,607, Cl. 414-786.000.

Hinchcliffe, Dennis; and Molins, Desmond W., to Molins Limited. Sheet feeding apparatus. 4,397,457, Cl. 271-12.000.

Hines, Alex E., to Occidental Oil Shale, Inc. Two-pass method for developing a system of in situ oil shale retorts. 4,397,502, Cl. 299-2.000.

Hinkle, John C.: *See*—
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Sugata, Masao; Fukaya, Masaki; Nakagiri, Takashi; Yamagata, Takaaki; and Hirai, Yutaka, 4,397,933, Cl. 430-84.000.

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Hiramoto, Tatsumi, to Ushio Denki Kabushikikaisha. Equipment and method for annealing semiconductors. 4,398,094, Cl. 250-492.100.

Hirano, Takashi, to Yamato Scale Company, Ltd. Combination weighing machine. 4,397,364, Cl. 177-25.000.

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Takezawa, Kenji; and Hiratani, Hajima, 4,397,840, Cl. 424-99.000.

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Yannopoulos, Lymperios N.; and Hirayama, Chikara, 4,397,888, Cl. 427-86.000.

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Akai, Yoshimi; Taya, Akira; Mori, Leo; Narita, Kazuo; and Hirose, Masahiko, 4,397,885, Cl. 427-38.000.

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Hirose, Takao: *See*—
Uemura, Seiichi; Yamamoto, Shunichi; and Hirose, Takao, 4,397,830, Cl. 423-447.100.

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Ienaka, Masanori; and Iso, Yoshimi, 4,398,060, Cl. 179-1.0GD.
Mizokawa, Sadao; Yasumoto, Seiichi; and Takahashi, Masahiro, 4,398,288, Cl. 370-86.000.
Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,397,912, Cl. 428-336.000.
Takahashi, Junichi; Shibata, Takanori; Naito, Shotaro; and Tokuyama, Keiichi, 4,398,260, Cl. 364-565.000.
Terashima, Isamu, 4,397,265, Cl. 118-694.000.
Usui, Toshifumi; Kohno, Takashige; Osawa, Tadao; and Sakuma, Tokihiko, 4,397,792, Cl. 261-23.00A.

Hittel, Gerhard: *See*—
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Hayward, Terence J., 4,397,195, Cl. 73-861.740.

Hocker, Jurgen; and Dhein, Rolf, to Bayer Aktiengesellschaft. Thermoplastic plastics containing burr-shaped or fibrous doped polyacetylene particles and process for the production thereof. 4,397,971, Cl. 524-40.000.

Hodel, Ulf: *See*—
Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, 4,397,413, Cl. 228-174.000.

Hodges, Robert J.; Crick, Aubrey M.; and Rogers, Charles E., to ITT Industries, Inc. Snap-action switch. 4,398,071, Cl. 200-67.0DB.

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Dettmer, Gerhard; and Hammerschmidt, Peter, 4,397,905, Cl. 428-180.000.
Kaelberer, Heinz; and Wolf, Hans, 4,397,891, Cl. 427-238.000.
Krause, Werner; Grosse, Jurgen; and Klose, Werner, 4,397,791, Cl. 260-981.000.
Porrmann, Herbert; Heidel, Peter; and Stenger, Karl, 4,397,337, Cl. 138-118.100.
Springer, Hartmut, 4,397,649, Cl. 8-436.000.

Hoechst, Lonnie D.: *See*—
Lynnes, Carman P.; Kielb, Eugene J.; Mather, Joseph M.; Albright, Larry E.; and Hoechst, Lonnie D., 4,397,371, Cl. 180-271.000.

Hof, Craig R.; Ulin, Roy A.; and Nickoloff, Dennis, to PyMaH Corporation. Pressure sensitive adhesive containing a nucleating agent for use in a disposable thermometer. 4,397,570, Cl. 374-162.000.

Hoff, Marcian E., Jr.; and Huggins, John M., to Intel Corporation. MOS Digital-to-analog converter with resistor chain using compensating "dummy" metal contacts. 4,398,207, Cl. 357-51.000.

Hoffend, Thomas R.: *See*—
Ciccarelli, Roger N.; and Hoffend, Thomas R., 4,397,935, Cl. 430-110.000.

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Boris, Alfred; Partridge, John J.; and Uskokovic, Milan R., 4,397,847, Cl. 424-236.000.

Hofstadt, Carl-Ernst; Schneider, Michael; and Kochloefl, Karel, to Sud Chemie, A.G. Process for the production of olefins from synthesis gas. 4,398,050, Cl. 585-640.000.

Holberger, Kenneth D.; Veres, James E.; Ziegler, Michael L.; and Henry, Carl, to Data General Corporation. Data processing system having a unique instruction processor system. 4,398,243, Cl. 364-200.000.

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Holl, Roland: *See*—
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Holmes, John R., to Discovision Associates. Method for making a video disc. 4,397,805, Cl. 264-328.140.

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Hoff, Marcian E., Jr.; and Huggins, John M., 4,398,207, Cl. 357-51.000.

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Zylbert, Thaddeus J.; and Hurler, Herbert T., 4,397,250, Cl. 112-184.000.

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Fink, Arthur C., Jr., 4,397,447, Cl. 251-356.000.

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Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., to Bell Telephone Laboratories, Incorporated. Data set diagnostic system. 4,398,297, Cl. 375-7.000.

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Quayle, Joshua C., 4,398,145, Cl. 324-62.000.

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Cox, Michael K.; and Griffin, Brian P., 4,398,019, Cl. 528-183.000.
Rose, John B., 4,398,020, Cl. 528-207.000.
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INA Walzlager Schaeffler KG: *See*—
Kraus, Gerhard; and Schwarz, Gunther, 4,397,507, Cl. 308-217.000.
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Craig, Robert J. G.; Imbault, James J.; and Fitzgerald, John E., 4,397,185, Cl. 73-504.000.
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Inman, Calvin R. Undersea platform construction system. 4,397,578, Cl. 405-33.000.
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Derbenwick, Gary F.; Adams, James R.; Hanson, Matthew V.; and Ryden, William D., 4,397,077, Cl. 29-571.000.
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Institut Francais du Petrole: *See*—
Cretin, Jacques; and Beauducel, Claude, 4,398,271, Cl. 367-20.000.
Jacquin, Yves; Dinh, Chan T.; Gimenez-Coronado, Manuel; and Cosyns, Jean, 4,397,739, Cl. 208-210.000.
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,398,049, Cl. 585-512.000.
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Ahlen, Hans O. S., 4,397,525, Cl. 350-162.170.
Intel Corporation: *See*—
Hoff, Marcian E., Jr.; and Huggins, John M., 4,398,207, Cl. 357-51.000.
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Aldrich, Charles S., 4,397,575, Cl. 400-208.000.
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Cheng, Ying Y.; Grant, Barbara D.; Pederson, Lester A.; and Willson, Carlton G., 4,398,001, Cl. 525-502.000.
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; Twieg, Robert J.; and Willson, Carlton G., 4,397,937, Cl. 430-192.000.
Davidson, Evan E.; Katopis, George A.; and Rubin, Barry J., 4,398,106, Cl. 307-549.000.
Dickie, Hugh G.; Hearn, Anthony R.; and Heath, John S., 4,398,167, Cl. 335-272.000.
Dickstein, Heidi L.; and Dickstein, William H., 4,397,751, Cl. 252-62.540.
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Fatula, Joseph J., Jr.; and Garbarino, Paul L., 4,397,075, Cl. 29-571.000.
Goff, Willie, Jr.; and Jenkins, William M., 4,397,085, Cl. 29-850.000.
Haller, Ivan, 4,397,722, Cl. 204-159.130.
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Boden, Richard M.; and Licciardello, Michael, 4,397,789, Cl. 260-463.000.
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,398,038, Cl. 560-103.000.
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McKelvey, Thomas H., 4,397,395, Cl. 211-60.00T.
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Bauck, Randall C., 4,398,228, Cl. 360-77.000.
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Belart, Juan, 4,397,219, Cl. 91-376.00R.
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Jackson, Joseph F., to Thomas Broadbent & Sons Limited. Seal for rotary apparatus for gas-liquid contacting. 4,397,795, Cl. 261-89.000.
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Jacobs, Daimon C. Catheter support device. 4,397,641, Cl. 604-180.000.
Jacobs, Jacobus P., to Caraid Patents, N.V. Spraying of plants, and apparatus therefor. 4,397,420, Cl. 239-154.000.
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Jacubowiez, Isidore, to Midland-Ross Corporation. Device for feeding material to a furnace. 4,397,600, Cl. 414-152.000.
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Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,398,205, Cl. 357-38.000.
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Jensen, James R.; and Deacon, David W., to PACCAR Inc. Low-frequency-rate spring suspension system for a wheeled vehicle. 4,397,478, Cl. 280-711.000.
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Fresard, Marcel; and Jentschmann, Jakob, 4,397,252, Cl. 112-299.000.
Jidosha Kiki Co., Ltd.: *See*—
Inoue, Hidefumi, 4,397,506, Cl. 303-24.00C.
Takeshima, Sadao, 4,397,368, Cl. 180-143.000.
Jinkins, Danny R.; Lessig, William R., III; and Canatella, Timothy J., to Black & Decker Inc. Vacuum cleaner tool for use on horizontal and vertical surfaces. 4,397,060, Cl. 15-377.000.
Jiu, James: *See*—
Marsheck, William J.; Jiu, James; and Wang, Ping T., 4,397,947, Cl. 435-58.000.
Joannais, Georges, to Souriau & Cie. Protection device for electrical connectors. 4,398,230, Cl. 361-1.000.
Johannsen, Robert, to Aubrey Manufacturing, Inc. Heating apparatus. 4,398,082, Cl. 219-370.000.
Johansson, Anders H.; and Leo, Thomas J., to Wyrough and Loser, Inc. Predispersed liquid or low melting solid peroxide vulcanizing agent or coagent compositions. 4,397,992, Cl. 525-305.000.
Johansson, Jan G.; Henningsen, Christian J.; and Koster, Arvo, to ESAB Aktiebolag. Arc welding power source. 4,398,080, Cl. 219-130.100.
Johansson, Lars S.; and Nordqvist, Bert S., to Vadstena Pumpar AB. Control unit for central heating systems. 4,397,418, Cl. 237-59.000.
John Hopkins University, The: *See*—
Weisfeldt, Myron L.; Tsitlik, Joshua E.; and Chandra, Nisha, 4,397,306, Cl. 128-28.000.
Johnson, Arthur D., to Wells Manufacturing Corporation. Means for mounting ignition control modules. 4,397,291, Cl. 123-640.000.
Johnson Controls, Inc.: *See*—
Bramow, Scott B.; Crum, Louis J.; and Riebe, William J., 4,398,087, Cl. 235-200.0PF.
Klein, Carl F.; Buchanan, Stuart R.; Thoma, Paul E.; and Klimek, David L., 4,397,702, Cl. 156-153.000.
Johnson, Donald S., to General Electric Company. Acceleration for anhydride-cured epoxy resins. 4,398,013, Cl. 528-89.000.
Johnson, Harry T.: *See*—
Suh, Sang-Kee; Hauser, Gotz S.; and Johnson, Harry T., 4,397,171, Cl. 72-348.000.
Johnson, John H., to Monsanto Company. Production of blood coagulation factor VIII:C. 4,397,841, Cl. 424-101.000.
Johnson, Marvin M.: *See*—
McDaniel, Max P.; and Johnson, Marvin M., 4,397,761, Cl. 252-429.00C.
McDaniel, Max P.; Sanbrano, John A.; and Johnson, Marvin M., 4,397,769, Cl. 252-458.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,398,004, Cl. 526-98.000.
Tabler, Donald C.; and Johnson, Marvin M., 4,398,052, Cl. 585-845.000.
Johnson, Nancy C.; Gotzmer, Carl; and Graff, Mark, to United States of America, Navy. Piperazine derivatives of ferrocene. 4,397,700, Cl. 149-7.000.
Johnson, Richard E.: *See*—
Frediani, John K.; Johnson, Richard E.; and Lillie, Terrance L., 4,398,246, Cl. 364-200.000.
Johnson, Sander K.; Murphy, Tim; Hensley, Dean; and Sallon, Ronald, to International Mask Research Foundation. Method of making masks. 4,397,701, Cl. 156-62.000.
Johnson, Steven H.; Grover, Thomas P.; and Kenihalo, Richard M., to Cobe Laboratories, Inc. Measuring low flowrates. 4,397,189, Cl. 73-861.000.
Johnston, Barry W. Closed loop solar collector system with dual chamber fluid supply arrangement. 4,397,300, Cl. 126-419.000.
Johnston, James S., to Rosemount Engineering Company Limited. Differential pressure sensing apparatus. 4,398,194, Cl. 340-870.370.
Johnstone, Alexander, to BP Chemicals Limited. Polymerization catalyst. 4,397,762, Cl. 252-429.00B.
Jones, Wallace R., to Excello Speciality Company, The. Paint mask. 4,397,261, Cl. 118-505.000.
Jostens, Inc.: *See*—
Hulber, Loren J.; and Fluckiger, Raymond W., 4,397,904, Cl. 428-167.000.
Joynt, Gerald E.; and Chan, Michael L., to Wilson Trailer Company. Collapsible outrigger side extension for load bed. 4,397,498, Cl. 296-182.000.
Jungesjo, Harald N., to Anderson-Cook, Inc. Cam actuated loader for forming machine. 4,397,174, Cl. 72-419.000.
Jurkowski, Walter J., to Pitney Bowes Inc. Method for cleaning a cold pressure fusing roller. 4,397,693, Cl. 134-6.000.
Kabelmetal Electro GmbH: *See*—
Gerth, Dieter; Schatz, Friedrich; and van Hove, Cornelius, 4,398,058, Cl. 174-106.00D.
Ziemek, Gerhard; and Kubiak, Herbert, 4,397,081, Cl. 29-599.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Fukushima, Yasuhiro, 4,398,107, Cl. 310-49.00R.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Tanaka, Yoshiro; Moroi, Hayato; Kamatsu, Yukihiko; Akagi, Kazuo; Shitamatsu, Ryujiro; and Nishimura, Tadashi, 4,397,328, Cl. 134-76.000.
Kabushiki Kaisha Meidensha: *See*—
Fukushima, Tomio; and Tanigaki, Shuzo, 4,398,187, Cl. 340-626.000.
Kabushiki Kaisha Morico: *See*—
Mori, Koukichi, 4,397,233, Cl. 101-35.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
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Ota, Tomio, 4,397,565, Cl. 368-242.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Kuwako, Tomohisa; and Tanase, Tosio, 4,398,109, Cl. 310-80.000.
Kaelberer, Heinz; and Wolf, Hans, to Hoechst Aktiengesellschaft. Process and apparatus for internally coating a tubing. 4,397,891, Cl. 427-238.000.
Kaga, Yasuo: *See*—
Ueno, Hiroshi; Miyamatsu, Yasunori; Aizawa, Masanori; Kaga, Yasuo; and Ishibashi, Kazuhisa, 4,397,401, Cl. 220-260.000.
Kai, Junjiro: *See*—
Kimura, Hiroshi; and Kai, Junjiro, 4,397,752, Cl. 252-70.000.
Kaibara, Nobuhiro; and Kobayashi, Masayoshi, to Diesel Kiki Co., Ltd. Distribution type fuel injection pump. 4,397,284, Cl. 123-502.000.
Kakuta, Mariko: *See*—
Miyachi, Hideki; Misaki, Akira; Kakuta, Mariko; Nakayama, Mineo; and Nagae, Hideo, 4,398,023, Cl. 536-1.100.
Kalina, Alexander I. Gas lift utilizing a liquefiable gas introduced into a well. 4,397,612, Cl. 417-54.000.

Kallianidis, Milton: *See*—
Rea, Jesse R.; Kallianidis, Milton; and Kelsey, G. Stephen, 4,397,924, Cl. 429-191.000.

Kalocai, Andrew J.: *See*—
Allen, Roland M.; and Kalocai, Andrew J., 4,397,706, Cl. 156-242.000.

Kamata, Shigeru, to Canon Kabushiki Kaisha. Zoom lens assembly with single operational member and means to prohibit defocussing while zooming. 4,397,528, Cl. 350-429.000.

Kamatsu, Yukihiko: *See*—
Tanaka, Yoshiro; Moroi, Hayato; Kamatsu, Yukihiko; Akagi, Kazuo; Shitamatsu, Ryujiro; and Nishimura, Tadashi, 4,397,328, Cl. 134-76.000.

Kamiya, Kanichi: *See*—
Mishima, Michiharu; Yamamoto, Yuji; Makita, Kensuke; Sakka, Sumio; and Kamiya, Kanichi, 4,397,666, Cl. 65-18.300.

Kammerling, Bruno; Meier, Franz; and Schmidt, Rainer, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Arrangement for securing plate-type coolers in metallurgical furnaces. 4,397,450, Cl. 266-193.000.

Kampe, Wolfgang: *See*—
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,397,848, Cl. 424-244.000.

Kampf, Richard S., to Beckman Instruments, Inc. Retractible stop having reduced retraction resistance. 4,397,386, Cl. 198-491.000.

Kanazawa, Yukio, to Fuji Xerox Co., Ltd. Copying machine for microfilm. 4,397,540, Cl. 355-14.00R.

Kanda, Yoshihumi; Morita, Isamu; Kandachi, Takayoshi; and Kiriu, Kazuyuki, to Central Glass Company Limited. Spraying apparatus for coating glass sheet with metal oxide. 4,397,259, Cl. 118-323.000.

Kandachi, Takayoshi: *See*—
Kanda, Yoshihumi; Morita, Isamu; Kandachi, Takayoshi; and Kiriu, Kazuyuki, 4,397,259, Cl. 118-323.000.

Kaneda, Hiroshi; Sato, Hiroshi; Nashimoto, Katsunori; and Matsui, Tadashi, to Nippon Steel Corporation. Apparatus for cooling hot-rolled wire rods. 4,397,449, Cl. 266-106.000.

Kaneko, Katsumi: *See*—
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,397,788, Cl. 260-441.000.

Kaneko, Shinji, to Sony Corporation. Analog-to-digital converting circuit. 4,398,179, Cl. 340-347.0AD.

Kanshin, Nikolai N.; Fedotov, Vladimir M.; Smirnov, Boris A.; and Guskov, Igor A., to Vsesojuzny Nauchnoissledovatelsky I Ispytatelny Institut. Surgical instrument for staple suturing of hollow organs. 4,397,311, Cl. 128-305.000.

Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Grommet for setting in sheet material. 4,397,061, Cl. 16-2.000.

Kao, Yih-Sien: *See*—
Liu, Frank C.; and Kao, Yih-Sien, 4,398,210, Cl. 358-36.000.

Kaplan, Bernard L.: *See*—
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Kappenhagen, George A.: *See*—
Kraft, Joseph K.; and Kappenhagen, George A., 4,397,096, Cl. 33-181.00R.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Winter, Karl; and Hittel, Gerhard, 4,397,160, Cl. 66-120.000.

Karp, Edward C.; and Curran, Randy J., to Sanitary Scale Company. Scale controller. 4,398,253, Cl. 364-466.000.

Kasparaitis, Albinas J.: *See*—
Bansevichus, Ramutis J.; Gapshis, Vladas-Algis A.; Kasparaitis, Albinas J.; Perfilov, Viktor V.; and Ragauskas, Alvidas J., 4,397,188, Cl. 73-651.000.

Kataoka, Nobuyuki; Saito, Tasuku; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, to Bridgestone Tire Co., Ltd.; and Toray Industries, Inc. Golf ball. 4,398,000, Cl. 525-437.000.

Katayama, Eiji: *See*—
Hamada, Takao; Tsuchiya, Nobuo; Inatani, Toshihiro; Takada, Yoshiyasu; Sumito, Mitsuo; Katayama, Eiji; Koitabashi, Toshimitsu; Okabe, Kyoji; and Ito, Yo, 4,397,691, Cl. 75-123.00B.

Katayama, Kouichi: *See*—
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Kathke, Gregor: *See*—
Wey, Edmund; Kathke, Gregor; Knors, Herbert; and Rosen, Klaus, 4,397,139, Cl. 57-22.000.

Katopis, George A.: *See*—
Davidson, Evan E.; Katopis, George A.; and Rubin, Barry J., 4,398,106, Cl. 307-549.000.

Kawabe, Tomofumi: *See*—
Araki, Masashi; Hibi, Takuo; Kawabe, Tomofumi; and Yamahara, Takeshi, 4,398,051, Cl. 585-640.000.

Kawahara, Hisashi, to Citizen Watch Co. Ltd. Electronic timepiece. 4,397,564, Cl. 368-204.000.

Kawakita, Takeshi; Muro, Tomio; and Setoguchi, Michihide, to Yoshitomi Pharmaceutical Industries Ltd. Isoxazole derivatives. 4,397,853, Cl. 424-250.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Ono, Yasuo, 4,398,095, Cl. 290-53.000.

Kawasaki, Kazunori: *See*—
Kosaka, Katsuaki; and Kawasaki, Kazunori, 4,397,149, Cl. 60-254.000.

Kawasaki Steel Corporation: *See*—
Hamada, Takao; Tsuchiya, Nobuo; Instani, Toshihiro; Takada, Yoshiyasu; Sumito, Mitsuo; Katayama, Eiji; Koitabashi, Toshimitsu; Okabe, Kyoji; and Ito, Yo, 4,397,691, Cl. 75-123.00B.

Kawasumi Laboratories, Inc.: *See*—
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Kawneer Company, Inc.: *See*—
Redman, Ronald E., 4,397,124, Cl. 52-126.400.

Kay, Christopher G.; and Lanning, John M., to Harnischfeger Corporation. Truck crane having an elongated main frame. 4,397,396, Cl. 212-189.000.

Kay, D. Alan R.; and Wilson, William G., to Union Oil Company of California. Desulfurization of fluid materials. 4,397,683, Cl. 75-58.000.

Keefe, Richard A., to Solaroi, Inc. Solar heating panel. 4,397,305, Cl. 126-448.000.

Keiji, Taniuchi. Easy opening container lid. 4,397,402, Cl. 220-268.000.

Keil, Reinhart: *See*—
Janicki, Max; Liefke, Hans-Georg; Keil, Reinhart; and Geyer, Gerd, 4,398,137, Cl. 318-601.000.

Kel-Lite Industries, Inc.: *See*—
Nelson, Norman C., 4,398,238, Cl. 362-187.000.

Keller, Arnold, to Waldemar Link GmbH & Co. Cranial extension holder. 4,397,307, Cl. 128-76.00R.

Keller, Jakob J., to BBC Brown, Boveri & Company, Limited. Compression wave machine. 4,397,613, Cl. 417-64.000.

Keller, Leon B.: *See*—
Rosser, Robin W.; and Keller, Leon B., 4,397,907, Cl. 428-240.000.

Keller, Philip J., to Signetics Corporation. Arbiter circuit. 4,398,105, Cl. 307-518.000.

Keller, Roger A.: *See*—
Carroll, Robert J.; Keller, Roger A.; Lane, E. James; and Williams, Freddie G., 4,398,172, Cl. 340-38.00P.

Kelling, Gordon L., to Phillips Temro, Inc. Diesel fuel warmer. 4,397,288, Cl. 123-557.000.

Kellogg, Michael S.; and Hamanaka, Ernest S., to Pfizer Inc. Process for converting 6,6-disubstituted penicillanic acid derivatives to the 6-β-congeners. 4,397,783, Cl. 260-245.20R.

Kelsey, G. Stephen: *See*—
Rea, Jesse R.; Kallianidis, Milton; and Kelsey, G. Stephen, 4,397,924, Cl. 429-191.000.

Kelsey-Hayes Co.: *See*—
Frait, John S., 4,398,252, Cl. 364-426.000.
Linkner, Herbert L., Jr., 4,397,505, Cl. 303-9.000.

KemaNord AB: *See*—
Edgren, Anders T.; and Svedberg, Lars-Olof, 4,397,799, Cl. 264-53.000.

Kemp, Thomas L., to UOP Inc. Process for the separation of particulate solids from vapors. 4,397,738, Cl. 208-161.000.

Kendall Company, The: *See*—
Patel, Harish A., 4,397,315, Cl. 128-403.000.

Kennametal Inc.: *See*—
Erickson, Robert A., 4,397,592, Cl. 407-105.000.

Kennedy, Robert J., Jr.: *See*—
Beaver, Jeffrey L.; Kennedy, Robert J., Jr.; Smith, Kendall, II; and Brown, Gregory N., 4,397,423, Cl. 239-684.000.

Kenshalo, Richard M.: *See*—
Johnson, Steven H.; Grover, Thomas P.; and Kenshalo, Richard M., 4,397,189, Cl. 73-861.000.

Kent, Raymond C.: *See*—
Haines, Charles, Jr.; and Kent, Raymond C., 4,397,894, Cl. 428-138.000.

Kent, William C., to Western Electric Company, Inc. Method and apparatus for straightening an array of terminal pins. 4,397,341, Cl. 140-147.000.

Kerkhof, Klaas W.: *See*—
Haverkamp, Antonius P.; and Kerkhof, Klaas W., 4,397,624, Cl. 425-113.000.

Kerkhoofs, Pieter L.: *See*—
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Kerr Glass Manufacturing Corporation: *See*—
Herr, James E., 4,397,397, Cl. 215-211.000.

Ketkar, Anil B., to Mobil Oil Corporation. Process for the combined coking and gasification of coal. 4,397,656, Cl. 48-202.000.

Keuch, Deane R., to Sure Air Limited. System for conditioning air of an internal space. 4,397,157, Cl. 62-180.000.

Khachaturian, Jon E.; and Charles, Joseph P., to Versabar, Inc. Spreader bar assembly. 4,397,493, Cl. 294-81.00R.

Kidde, Inc.: *See*—
LiCausi, Anthony, 4,397,165, Cl. 70-1.500.

Kielb, Eugene J.: *See*—
Lynnes, Carman P.; Kielb, Eugene J.; Mather, Joseph M.; Albright, Larry E.; and Hoechst, Lonnie D., 4,397,371, Cl. 180-271.000.

Kilichowski, Kurt B., to RCA Corporation. Method of using a positive electron beam resist medium. 4,397,939, Cl. 430-296.000.

Killat, Ulrich; Rabe, Gert; and Schmitt, Hans J., to U.S. Philips Corporation. Record carrier for deformation images. 4,397,930, Cl. 430-50.000.

Kimberly-Clark Corporation: *See*—
Frick, Richard H., 4,397,704, Cl. 156-201.000.
Matthews, Billie J.; Allison, John P.; Woon, Paul S.; Stevens, Robert A.; and Bornslaeger, Stephan R., 4,397,644, Cl. 604-378.000.

Kimura, Hiroshi; and Kai, Junjiro, to Mitsubishi Denki Kabushiki Kaisha. Heat storage material. 4,397,752, Cl. 252-70.000.

Kimura, Syuzo: *See*—
Yajima, Toshiyuki; and Kimura, Syuzo, 4,397,544, Cl. 355-58.000.
Kind, Guy J.: *See*—
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King, Charles H.: *See*—
Brick, Rowan O.; and King, Charles H., 4,398,234, Cl. 361-218.000.
King, Duane E.; and O'Brien, John R., to Monsanto Company. Gas permeation apparatus having permeate rate controlled valving. 4,397,661, Cl. 55-158.000.
King, Roderick V., to Ethyl Products Company. Method for threading closures. 4,397,597, Cl. 413-23.000.
Kinoshita, Keizo; Murakami, Koji; and Ohta, Hitoshi, to Chugai Ro Kogyo Co., Ltd.; and O & K Company Ltd. Furnace for the heat treatment of scale-covered steel. 4,397,451, Cl. 266-252.000.
Kinoshita, Masayuki: *See*—
Imada, Yukio; Osozawa, Tetsu; Morimoto, Yuki; and Kinoshita, Masayuki, 4,397,946, Cl. 435-55.000.
Kinumoto, Namio; Nakao, Takashi; and Murase, Hiroshi, to Osaka Gas Company, Limited. Method of lining pipes. 4,397,890, Cl. 427-230.000.
Kirby, Allan B.: *See*—
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Kirin Beer Kabushiki Kaisha: *See*—
Ishida, Nobuhiro; Sukekawa, Ikuo; Yasuda, Shigeo; and Yoshida, Yoshikazu, 4,397,246, Cl. 108-55.300.
Kiriu, Kazuyuki: *See*—
Kanda, Yoshihumi; Morita, Isamu; Kandachi, Takayoshi; and Kiriu, Kazuyuki, 4,397,259, Cl. 118-323.000.
Kirstein, Hartmut, to SMS Schloemann-Siemag Aktiengesellschaft. Aligning and measuring device for rolled plate. 4,397,205, Cl. 83-364.000.
Kiss, Steve, Jr.: *See*—
Lamb, Franklin D.; Kiss, Steve, Jr.; and Krueger, Thomas K., 4,398,161, Cl. 333-156.000.
Kitahara, Koichi: *See*—
Suzuki, Takashi; Kitahara, Koichi; Naito, Susumu; and Tsuji, Tomoji, 4,398,040, Cl. 562-413.000.
Kitrilakis, Sotiris: *See*—
Robinson, Thomas C.; and Kitrilakis, Sotiris, 4,397,049, Cl. 3-1.700.
Kittle, Carl E.: *See*—
Price, David S.; Schafer, Richard A.; and Kittle, Carl E., 4,397,359, Cl. 172-430.000.
Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf, to Degussa Aktienbesellschaft. Process for the production of 3-mercapto-propanediol-(1,2). 4,398,042, Cl. 568-62.000.
Klein, Carl F.; Buchanan, Stuart R.; Thoma, Paul E.; and Klimek, David L., to Johnson Controls, Inc. Fabrication of non-conductive charged sensing probe unit. 4,397,702, Cl. 156-153.000.
Klein, Hans-Hermann: *See*—
Heisig, Rolf; Klein, Hans-Hermann; and Volker, Karl-Heinz, 4,397,156, Cl. 62-6.000.
Klein, Johannes: *See*—
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Klein, Konrad, to Zinser Textilmaschinen GmbH. Lubricating system for anti-ballooning rings of textile machines. 4,397,143, Cl. 57-355.000.
Klem, John E., to Dresser Industries, Inc. Radiator baffle. 4,397,348, Cl. 165-41.000.
Klement, Heribert: *See*—
Busch, Gerhard; Jakob, Heinz; Jendrzejewski, Reiner; Klement, Heribert; Prohaska, Hans; Schmid, Eckhardt; and Schneider, Theodor, 4,398,135, Cl. 318-443.000.
Kliewer, Wayne R.: *See*—
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Klimek, David L.: *See*—
Klein, Carl F.; Buchanan, Stuart R.; Thoma, Paul E.; and Klimek, David L., 4,397,702, Cl. 156-153.000.
Klingensmith, James B.: *See*—
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Klose, Werner: *See*—
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Knab, Rochus: *See*—
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Knaisch, Otto: *See*—
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Knorpp, Eberhard: *See*—
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Knors, Herbert: *See*—
Wey, Edmund; Kathke, Gregor; Knors, Herbert; and Rosen, Klaus, 4,397,139, Cl. 57-22.000.
Knute, Wallace L., to Ivac Corporation. Drop sensing unit and associated drip chamber for IV fluid administration. 4,397,648, Cl. 604-253.000.
Ko, Eric C.: *See*—
Dano, Paul K.; and Ko, Eric C., 4,398,198, Cl. 343-103.000.
Kobashi, Mamoru: *See*—
Itoh, Hiroshi; Watanabe, Haruo; and Kobashi, Mamoru, 4,397,275, Cl. 123-339.000.
Kobayashi, Masayoshi: *See*—
Kaibara, Nobuhiro; and Kobayashi, Masayoshi, 4,397,284, Cl. 123-502.000.
Kochendorfer, Richard. Bandage for radially stressing the segments of a compressor rotor for a turbine. 4,397,609, Cl. 416-214.00R.
Kochloefl, Karel: *See*—
Hofstadt, Carl-Ernst; Schneider, Michael; and Kochloefl, Karel, 4,398,050, Cl. 585-640.000.
Kocks Technik GmbH & Company: *See*—
Staat, Karlhans, 4,397,169, Cl. 72-10.000.
Kodaka, Kenji: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,397,864, Cl. 424-282.000.
Koga, Hiroshi: *See*—
Irikura, Tsutomu; Koga, Hiroshi; and Murayama, Satoshi, 4,398,029, Cl. 544-363.000.
Kohl, Clyde B.; and Fleming, Raymond T., to GTE Products Corporation. Electric lamp unit with improved fuse means. 4,398,124, Cl. 315-74.000.
Kohno, Takashige: *See*—
Usui, Toshifumi; Kohno, Takashige; Osawa, Tadao; and Sakuma, Tokihiko, 4,397,792, Cl. 261-23.00A.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Spindle orientation control method and apparatus. 4,398,138, Cl. 318-603.000.
Koide, Kaoru; Yoneda, Yoshiki; and Musashi, Kenkichi, to Meiji Milk Products Company Limited. Process for producing a cream cheese-like food. 4,397,878, Cl. 426-40.000.
Koitabashi, Toshimitsu: *See*—
Hamada, Takao; Tsuchiya, Nobuo; Inatani, Toshihiro; Takada, Yoshiyasu; Sumito, Mitsuo; Katayama, Eiji; Koitabashi, Toshimitsu; Okabe, Kyoji; and Ito, Yo, 4,397,691, Cl. 75-123.00B.
Kojima, Yasuhumi: *See*—
Naitoh, Masataka; Urano, Susumu; Kuroda, Minoru; Kojima, Yasuhumi; and Tsukahara, Kenji, 4,398,258, Cl. 364-551.000.
Kokubun, Yoshihiro: *See*—
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Johansson, Jan G.; Henningsen, Christian J.; and Koster, Arvo, 4,398,080, Cl. 219-130.100.
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Russell, Thomas J., 4,397,515, Cl. 339-177.00R.

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Ziemek, Gerhard; and Kubiak, Herbert, 4,397,081, Cl. 29-599.000.

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Mihara, Osamu; and Kumada, Toyoji, 4,398,295, Cl. 373-120.000.

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Meiller, Hermann; and Kunst, Otto, 4,397,501, Cl. 297-301.000.

Kunz, Volker G.: *See*—
Acimovic, Simeon; Lindemann, Karl-Heinz; and Kunz, Volker G., 4,397,717, Cl. 204-55.00Y.

Kuraray Co., Ltd.: *See*—
Ikeda, Saburo, 4,397,747, Cl. 210-641.000.

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Haruo, Hamazaki, 4,397,744, Cl. 210-225.000.

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Exalto, Robertus; and Kwakernaak, Adriaan, 4,397,721, Cl. 204-144.000.

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Irikura, Tsutomu; Koga, Hiroshi; and Murayama, Satoshi, 4,398,029, Cl. 544-363.000.

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Ando, Akitoshi, 4,398,183, Cl. 340-500.000.

Labbe, Francis A. M., to Molins Limited. Cigarette making machine. 4,397,320, Cl. 131-84.00R.

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Steiner, Michel, 4,397,046, Cl. 2-44.000.

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Currence, Evan J., 4,398,231, Cl. 361-23.000.

Lamadrid, Rene, to Baxter Travenol Laboratories, Inc. Motor driven occlusion controller for liquid infusion and the like. 4,397,642, Cl. 604-245.000.

Lamb, Franklin D.; Kiss, Steve, Jr.; and Krueger, Thomas K., to United States of America, Air Force. Phase-shifting araplifier. 4,398,161, Cl. 333-156.000.

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Lan-Elec Limited: *See*—
Czala, Ferenc L., 4,397,206, Cl. 83-399.000.

Lanctot, Jane B.: *See*—
Husson, Alan L.; and Lanctot, Jane B., 4,397,377, Cl. 187-29.00R.

Landau, Remy: *See*—
Pardo, Rene K.; and Landau, Remy, 4,398,249, Cl. 364-300.000.

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Green, William L.; Calkins, Dennis E.; Landers, Edward A., Jr.; and Gray, Daniel W., 4,397,582, Cl. 405-137.000.

Landry, Archie C., to North American Mfg. Corp. Hand and improved hand spring for single action firearm. 4,397,110, Cl. 42-65.000.

Landry, Jean-Guy. Covered toaster for energy saving and faster toasting. 4,397,227, Cl. 99-334.000.

Lane, E. James: *See*—
Carroll, Robert J.; Keller, Roger A.; Lane, E. James; and Williams, Freddie G., 4,398,172, Cl. 340-38.00P.

Langenberg, Anthony J.: *See*—
Overy, Colin; and Langenberg, Anthony J., 4,397,120, Cl. 51-170.0MT.

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Rutsche, Wendolin; and Langenegger, Urs, 4,397,244, Cl. 108-6.000.

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Langford, James W., Jr., to Dresser Industries, Inc. Abradable cutter protection. 4,397,361, Cl. 175-329.000.

Lanier Business Products, Inc.: *See*—
Titus, Theodore, IV; and Bagley, Julius B., 4,398,279, Cl. 369-58.000.

Lanning, John M.: *See*—
Kay, Christopher G.; and Lanning, John M., 4,397,396, Cl. 212-189.000.

Larkin, Mark E., to Abbott Laboratories. In-line sleeve valve. 4,397,442, Cl. 251-342.000.

Larner, Donald A., to Fluid Devices Limited. Unbalanced spool. 4,397,614, Cl. 417-403.000.

Laubie, Michel: *See*—
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,397,857, Cl. 424-263.000.

Laughbaum, Edward E., to Bancohio National Bank. Material treatment and windrowing apparatus. 4,397,674, Cl. 71-9.000.

Lausch, H. Nevin; and Priepke, Edward H., to Sperry Corporation. Row crop attachment with sweeper chain. 4,397,134, Cl. 56-98.000.

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Lautenschlager, Hans-Heiner: *See*—
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Lautenschlager, Horst; and Lautenschlager, Gerhard W., to Mepla, Inc. Cabinet hinge. 4,397,064, Cl. 16-379.000.

Lazarus, Stanley D.: *See*—
Marshall, Robert M.; Dardoufas, Kimon C.; and Lazarus, Stanley D., 4,397,985, Cl. 524-837.000.

Lea, Richard K.; Edwards, Julian D.; and Colton, D. Frederick, to Inco Limited. Process for the extraction of precious metals from concentrates thereof. 4,397,689, Cl. 75-108.000.

Leanza, William J.: *See*—
Christensen, Burton G.; Hannah, John; Leanza, William J.; and Shih, David H., 4,397,861, Cl. 424-274.000.

Lechner, Wilhelm: *See*—
Eck, Herbert; Adler, Klaus; Hannebaum, Manfred; and Lechner, Wilhelm, 4,397,968, Cl. 523-305.000.

Lederrey, Marc, to Montres Rado S.A. Wrist-watch casing. 4,397,566, Cl. 368-291.000.

Lee, Ho C.; Rickenbach, David H.; Wolfert, Gerhard A.; and Zable, Jack L., to International Business Machines Corporation. Electromagnetic print hammer coil assembly. 4,397,234, Cl. 101-93.290.

Lee, Kwang H.: *See*—
Paganini, Bruno J.; Anavil, Yodhin; Hale, William J.; and Lee, Kwang H., 4,398,257, Cl. 364-550.000.

Lee, Patrick S., to Sperry Corporation. Read channel gate generator with self-adjusting pulse width compensator. 4,398,154, Cl. 328-58.000.

Lee, Robert M. Luggage zipper protector. 4,397,378, Cl. 190-52.000.

Lee, Roy, Jr. Apparatus for handling pipe to effect high speed machining operations. 4,397,054, Cl. 10-107.0PH.

Lees, David E. B., to Honeywell Inc. Eye closure discrimination system. 4,397,531, Cl. 351-210.000.

Legrand: *See*—
Durand, Guy; and Paulin, Daniel, 4,397,514, Cl. 339-95.00D.

Lehmann, William F., to Weyerhaeuser Company. Method and composition for reduction of formaldehyde emission in wood composite panels. 4,397,756, Cl. 252-182.000.

Le Maitre, Richard B. C.: *See*—
Goddard, Vaughan P.; and Le Maitre, Richard B. C., 4,397,909, Cl. 428-252.000.

Lemartret, Odile: *See*—
Allais, Andre; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, 4,397,856, Cl. 424-251.000.

LeMay, Christopher A. G., to EMI Limited. Radiography. 4,398,251, Cl. 364-414.000.

Lemay, Johanne: *See*—
Bage, Marc; and Lemay, Johanne, 4,397,551, Cl. 356-73.100.

Lemelson, Jerome H. Electronic tool and method. 4,397,196, Cl. 73-862.230.

Lemelson, Jerome H. Molding system and article. 4,397,247, Cl. 108-57.100.

Lemelson, Jerome H. System for recording video information on a record card. 4,398,223, Cl. 358-335.000.

Lemonnier, Jean, to Millipore Corporation. Test method and apparatus for the presence of microorganism in syringe. 4,397,945, Cl. 435-31.000.

Lenzen, Jakob: *See*—
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Leo, Thomas J.: *See*—
Johansson, Anders H.; and Leo, Thomas J., 4,397,992, Cl. 525-305.000.

Leonida, Andrei: *See*—
Chi, Chang V.; and Leonida, Andrei, 4,397,917, Cl. 429-26.000.

Lepczynski, Richard: *See*—
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Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, to Institut Francais du Petrole. Oligomerization catalyst and process. 4,398,049, Cl. 585-512.000.

Le Pochard, Jacques: *See*—
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Lessig, William R., III: *See*—
Jinkins, Danny R.; Lessig, William R., III; and Canatella, Timothy J., 4,397,060, Cl. 15-377.000.

L'Etat Francais: *See*—
Feldmann, Michel; Henaff, Jeannine; and Gabry, Andre, 4,398,163, Cl. 333-193.000.

Letuan, Phac: *See*—
Dahan, Pierre-Louis; and Letuan, Phac, 4,398,171, Cl. 340-22.000.

Leutwyler, Robert, to Fritz Gegauf Aktiengesellschaft Bernina-Nahamaschinenfabrik. Foot-operated control device for electrically operated appliances. 4,397,251, Cl. 112-277.000.

Lever Brothers Company: *See*—
Brierley, John M.; and Scott, Melvin, 4,397,755, Cl. 252-113.000.
Bright, Samuel C.; and Postlethwaite, Dennis, 4,397,757, Cl. 252-186.410.

Leveson, Richard C. Photoionization detector. 4,398,152, Cl. 324-465.000.

Levine, David A., to Harris Corporation. Snap acceleration method of diagnosing faults in internal combustion engines. 4,398,259, Cl. 364-551.000.

Levinson, Lionel M., to General Electric Company. Varistors with controllable voltage versus time response. 4,397,775, Cl. 252-518.000.

Lewis, George K., to Siemens Gammasonics, Inc. Transducer for electronic focal scanning in an ultrasound imaging device. 4,398,116, Cl. 310-334.000.

Lewis, Jennings B.: *See*—
Maddever, Wayne J.; Burns, Michael T.; and Lewis, Jennings B., 4,397,685, Cl. 75-60.000.

Lewis, Norris E.; and Skiles, Jean A., to Litton Systems, Inc. Fiber brush slip ring assembly. 4,398,113, Cl. 310-232.000.

Lewis, Stephen A. M., to Clark Equipment Company. Automatic grip control circuit for a grapple mechanism. 4,397,495, Cl. 294-88.000.

Leybold Heraeus GmbH: *See*—
Heisig, Rolf; Klein, Hans-Hermann; and Volker, Karl-Heinz, 4,397,156, Cl. 62-6.000.

Leyck, Sigurd: *See*—
Welter, Andre; Lautenschlager, Hans-Heiner; Etschenberg, Eugen; and Leyck, Sigurd, 4,397,858, Cl. 424-270.000.

Leyendecker, Gerhard: *See*—
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Li, Norman N.: *See*—
Dawson, Charles R.; Li, Norman N.; and O'Brien, Dennis E., 4,397,354, Cl. 166-294.000.

Liba, Joseph; and Rafferty, Michael, to Chrysler Corporation. Fuel collector assembly. 4,397,333, Cl. 137-574.000.

LiCausi, Anthony, to Kidde, Inc. Locking mechanism for a money box assembly having a fusible cam. 4,397,165, Cl. 70-1.500.

Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., to International Flavors & Fragrances Inc. Oxoalkyl esters. 4,398,038, Cl. 560-103.000.

Licciardello, Michael: *See*—
Boden, Richard M.; and Licciardello, Michael, 4,397,789, Cl. 260-463.000.

Lichti, Reiner: *See*—
Dietrich, Klaus; Lichti, Reiner; and Rosenstock, Gunter, 4,398,204, Cl. 346-140.000.

Liefke, Hans-Georg: *See*—
Janicki, Max; Liefke, Hans-Georg; Keil, Reinhart; and Geyer, Gerd, 4,398,137, Cl. 318-601.000.

Liller, Delbert I. Method of installing replaceable sleeve in fixed vortex finder. 4,397,071, Cl. 29-401.100.

Lillibridge, Harold R.; and Sullivan, John, to Champion International Corporation. Apparatus for applying and drying sealing material to the seal flap of envelopes. 4,397,262, Cl. 118-620.000.

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Frediani, John K.; Johnson, Richard E.; and Lillie, Terrance L., 4,398,246, Cl. 364-200.000.

Limburg, William W.; Resfer, Dale S.; and Pai, Damodar M., to Xerox Corporation. Stabilized organic layered photoconductive device. 4,397,931, Cl. 430-59.000.

Limet, Joseph: *See*—
Moussebois, Claude H.; Masson, Pierre L.; Vaerman, Jean-Pierre; Limet, Joseph; and Cambiaso, Cesar L., 4,397,960, Cl. 436-512.000.

Lin, Kun-Shan; Goudie, Kathleen M.; and Frantz, Gene A., to Texas Instruments Incorporated. Speech producing system. 4,398,059, Cl. 179-1.0SM.

Lind, Leif I. Method and device for extracting contaminated air by suction. 4,397,226, Cl. 98-115.00R.

Lind, Willard H. Lever adapter for door knob. 4,397,489, Cl. 292-347.000.

Lindberg, Lars G. S.: *See*—
Russ, Arild; Sjostrand, Pehr-Olof G.; Sternberg, Ingvar P.; and Lindberg, Lars G. S., 4,398,178, Cl. 340-310.00A.

Lindemann, Karl-Heinz: *See*—
Acimovic, Simeon; Lindemann, Karl-Heinz; and Kunz, Volker G., 4,397,717, Cl. 204-55.00Y.

Linder, Lars-Erik: *See*—
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Lineman, Harry L.: *See*—
Barnes, Johnny G.; Chukran, Rudolph E.; Hurley, Patrick J.; and Lineman, Harry L., 4,397,572, Cl. 400-3.000.

Linkner, Herbert L., Jr., to Kelsey-Hayes Company. Control valve. 4,397,505, Cl. 303-9.000.

Lisiecki, Robert E., to Ex-Cell-O Corporation. Liquid container with straw opening means. 4,397,394, Cl. 206-608.000.

Lisiecki, Robert E., to Ex-Cell-O Corporation. Container and blank for constructing same. 4,397,415, Cl. 229-17.00R.

Littlechild, James E.: *See*—
Butler, Gregg G.; Gillies, George M.; Heal, Thomas J.; and Littlechild, James E., 4,397,824, Cl. 423-260.000.

Litton Systems, Inc.: *See*—
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Litvinova, Valentina I.: *See*—
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Liu, Frank C.; and Kao, Yih-Sien, to RCA Corporation. Impulse noise detection circuit for TV signals. 4,398,210, Cl. 358-36.000.

Liu, Ping Y.: *See*—
Boutni, Omar M.; and Liu, Ping Y., 4,397,982, Cl. 524-493.000.

Lloyd, Milton H. Coprocessed nuclear fuels containing (U, Pu) values as oxides, carbides or carbonitrides. 4,397,778, Cl. 252-627.000.

Lockey, David J.: *See*—
d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., 4,398,300, Cl. 377-18.000.

Lofquist, Robert A.: *See*—
Merrill, Robert G.; Lofquist, Robert A.; Weedon, Gene C.; Haylock, John C.; and Twilley, Ian C., 4,398,012, Cl. 528-84.000.

Logan, Kenyon E., to United States of America, National Aeronautics and Space Administration. Active lamp pulse driver circuit. 4,398,129, Cl. 315-208.000.

Long, Nicholas R.; Peisel, William E.; Ryan, Joseph L.; Stafford, John P.; and Watkins, Richard R., to Honeywell Information Systems Inc. Character generator display system. 4,398,190, Cl. 340-728.000.

Loeganbach, James R. Method of producing a colloidal fuel from coal and a heavy petroleum fraction. 4,397,653, Cl. 44-51.000.

Lopata, Ira; and Barto, Robert M., Jr., to Ragen Precision Industries, Inc. Method and apparatus for transporting an electrostatic strip. 4,397,541, Cl. 355-14.0SH.

Lopez, Jose G.: *See*—
Stana, Regis R.; and Lopez, Jose G., 4,397,820, Cl. 423-8.000.

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Dawdy, Terrance H., 4,397,707, Cl. 156-307.500.

L'Oreal: *See—*
Sebag, Henri, 4,398,045, Cl. 568-624.000.
Lotgering, Frederik K.; and Vromans, Petrus H. G. M., to U.S. Philips Corporation. Method of manufacturing an anisotropic oxidic permanent magnet. 4,397,796, Cl. 264-24.000.
Lotsch, Wolfgang; and Hilbert, Peter, to BASF Aktiengesellschaft. Preparation of pigmentary form isoindoline. 4,398,027, Cl. 544-296.000.
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Dargel, William O.; Lougheed, Robert M.; and McCubbrey, David L., 4,398,176, Cl. 382-27.000.
Low, Jim Y., to Phillips Petroleum Company. Hydrotreating supercritical solvent extracts in the presence of alkane extractants. 4,397,736, Cl. 208-11.0LE.
Lu, Chin H., to Xerox Corporation. Developer compositions containing quaternized vinylpyridine polymers, and copolymers. 4,397,934, Cl. 430-110.000.
Lucas Electrical Company Limited, The: *See—*
Salway, Peter H., 4,397,282, Cl. 123-487.000.
Lucas Industries Limited: *See—*
Gowan, William L.; and Wadkins, Charles K., 4,397,659, Cl. 55-41.000.
Harrison, Anthony W., 4,397,477, Cl. 280-709.000.
Hibell, Ernest G.; and West, Raymond, 4,398,182, Cl. 340-388.000.
Mowbray, Dorian F., 4,397,615, Cl. 417-221.000.
Luckenbach, Edward C., to Exxon Research and Engineering Co. Apparatus for regeneration of spent cracking catalyst. 4,397,816, Cl. 422-144.000.
Ludwig, Daniel P.: *See—*
Geesen, Michel; Mourant, Jacques; and Ludwig, Daniel P., 4,398,286, Cl. 370-69.100.
Luebke, Robert W.: *See—*
Marsh, Ronald P.; and Luebke, Robert W., 4,397,899, Cl. 428-77.000.
Luecke, Beth E.: *See—*
Meyer, Burton C.; and Luecke, Beth E., 4,397,871, Cl. 426-5.000.
Lund, Richard G., III. Prenatal support pillow. 4,397,052, Cl. 5-431.000.
Lunden, Richard W.: *See—*
Swift, Harold E.; and Lunden, Richard W., 4,398,005, Cl. 526-119.000.
Lutz, James P.: *See—*
Stolz, Theodore O.; Moore, Richard A.; and Lutz, James P., 4,397,966, Cl. 521-167.000.
Lutz, Karl A.; and Knorpp, Eberhard, to Siemens Aktiengesellschaft. Time-division multiplex switching network. 4,398,285, Cl. 370-58.000.
Lutz, Phillip A.; Motz, Phillip R.; and Sayers, Eugene H., to General Motors Corporation. Vertical integrated circuit package integration. 4,398,235, Cl. 361-393.000.
Lykes Pasco Packing Company: *See—*
Hume, Ronald W., 4,397,133, Cl. 53-485.000.
Lynnes, Carman P.; Kielb, Eugene J.; Mather, Joseph M.; Albright, Larry E.; and Hoechst, Lonnie D., to Clark Equipment Company. Loader operator restraint system. 4,397,371, Cl. 180-271.000.
Lyon, Robert C.; and Fearns, Peter, to BICC Limited. Device for securing at least one cable, pipe or other elongate member. 4,397,436, Cl. 248-68.00R.
M.A. Industries, Inc.: *See—*
Zappa, Robert J.; and Peacock, Bobbie, 4,397,424, Cl. 241-20.000.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Kammerling, Bruno; Meier, Franz; and Schmidt, Rainer, 4,397,450, Cl. 266-193.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Greiner, Harry M.; Holl, Roland; Neberle, Klaus; and Abendroth, Paul, 4,397,236, Cl. 101-350.000.
Makosch, Manfred, 4,397,237, Cl. 101-352.000.
Maass, Wolfgang: *See—*
Haendle, Joerg; Maass, Wolfgang; and Wolf, Hans-Dieter, 4,398,213, Cl. 358-111.000.
MacDonald, John F.: *See—*
Aytac, Haluk M.; and MacDonald, John F., 4,397,887, Cl. 427-85.000.
Machida, Ryoichi: *See—*
Taki, Kazuo; Machida, Ryoichi; and Katayama, Kouichi, 4,397,951, Cl. 435-188.000.
Machine Cutting, Inc.: *See—*
Mayfield, Johnny W.; and Totten, Roger W., 4,397,202, Cl. 82-4.00R.
Mack, Charles H. Electric heating apparatus for pre-heating and molding fillet-forming wax strips. 4,398,083, Cl. 219-479.000.
Madan, Arun, to Chevron Research Company. Compensated amorphous silicon solar cell incorporating an insulating layer. 4,398,054, Cl. 136-255.000.
Maddever, Wayne J.; Burns, Michael T.; and Lewis, Jennings B., to Union Carbide Corporation. Production of ultra low carbon steel by the basic oxygen process. 4,397,685, Cl. 75-60.000.
Madej, Edward A., to Robroy Industries. Beam clamp. 4,397,437, Cl. 248-72.000.
Madrange, Annie; and Refregier, Jean-Louis, to Societe Anonyme Dite: L'OREAL. Aerosol hair lacquer composition containing as a propellant a mixture of trifluoromonochloroethane and carbon dioxide and or nitrous oxide. 4,397,836, Cl. 424-47.000.
Maeda, Yukio: *See—*
Inoue, Takao; Wakahata, Tamotsu; Maeda, Yukio; and Niboshi, Ikuo, 4,397,723, Cl. 204-159.150.
Magahed, El-Sayed A., to Ray-O-Vac Corporation. Alkaline battery with reducing agents in the electrolyte. 4,397,925, Cl. 429-207.000.
Maggio, Edward T. Means for monitoring the status of control of ketoacidosis-prone diabetics. 4,397,956, Cl. 436-34.000.
Magnetic Peripherals Inc.: *See—*
Milanes, Eddy J.; Highbridge, Russell E.; and Morgan, Robert S., 4,397,460, Cl. 271-263.000.
Mahieu, Marc; Varon, Jacques; and Vandenberg, Philippe, to U.S. Philips Corporation. Boat for the epitaxial growth of several layers from the liquid phase. 4,397,260, Cl. 118-421.000.
Maiocco, Guiseppe, to Arman S.p.A. Antitheft device for motor vehicles. 4,397,167, Cl. 70-370.000.
Maitlen, Jeffrey L.: *See—*
Shankle, Derrill F.; and Maitlen, Jeffrey L., 4,398,057, Cl. 174-2.000.
Makimoto, Toshio; and Nishimura, Sadahiko. Circularly polarized microstrip line antenna. 4,398,199, Cl. 343-700.0MS.
Makino, Tomoatsu: *See—*
Tanaka, Toshio; and Makino, Tomoatsu, 4,397,290, Cl. 123-618.000.
Makita, Kensuke: *See—*
Mishima, Michiharu; Yamamoto, Yuji; Makita, Kensuke; Sakka, Sumio; and Kamiya, Kanichi, 4,397,666, Cl. 65-18.300.
Makosch, Manfred, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Roller train structure for use with printing machine. 4,397,237, Cl. 101-352.000.
Malcolm, Richard E.; Assenheim, Harry M.; Emmett, Paul L.; and Chan, Richard, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Artificial horizon device. 4,397,555, Cl. 356-248.000.
Mallory, Glenn O., Jr., to Richardson Chemical Company. Electroless nickel polyalloys. 4,397,812, Cl. 420-441.000.
Malmohus Invest AB: *See—*
Edstrom, Lars G., 4,397,458, Cl. 271-14.000.
Man-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,397,235, Cl. 101-141.000.
Mancebo, Ronald A. Solar water heating system. 4,397,294, Cl. 126-121.000.
Manderla, Henry J., to Anthes Equipment Ltd. Wall form and method of assembly thereof. 4,397,441, Cl. 249-19.000.
Mann, Egon, to Zahnradfabrik Friedrichshafen, Aktiengesellschaft. Hydrostatic-mechanical drive for self-propelled machines. 4,397,201, Cl. 74-730.000.
Mannhart, Peter; and Ruppen, Bruno, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for lubricating the locking bolts of a breechblock of an automatic firing weapon. 4,397,214, Cl. 89-1.00E.
Manning, Donald F.: *See—*
Drejza, John E.; Manning, Donald F.; and Wilson, Joseph T., III, 4,397,576, Cl. 400-320.000.
Manville Service Corporation: *See—*
Harris, Walter W., 4,397,665, Cl. 65-12.000.
Ramge, Dennis L.; and Miller, John H., 4,397,692, Cl. 134-2.000.
Ray, Richard J., Jr., 4,397,898, Cl. 428-43.000.
Marathon Oil Company: *See—*
Argabright, Perry A.; and Rhudy, John S., 4,397,748, Cl. 210-733.000.
Marchand, Daniel: *See—*
Darroussin, Michel; and Marchand, Daniel, 4,397,589, Cl. 405-260.000.
Marcyan, Stanley T. Caliper with dial indicator clamp and pistol grip. 4,397,092, Cl. 33-148.00R.
Marien, Bruce A., to Mobil Oil Corporation. Flame retardant polystyrene and poly(para-methylstyrene) compositions containing octahalobiphthalyl. 4,397,972, Cl. 524-109.000.
Mark, H. Wayne: *See—*
Roberts, John S.; Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,397,767, Cl. 252-431.00P.
Marschke, Charles K.: *See—*
Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., 4,397,950, Cl. 435-125.000.
Marsh, Ronald P.; and Luebke, Robert W., to True Temper Corporation. Variable thickness mat for use at the stress transition zone juncture of a bridge-roadway or the juncture of a railroad crossing-roadway. 4,397,899, Cl. 428-77.000.
Marshall, Dennis. Mixing valve. 4,397,329, Cl. 137-100.000.
Marshall, Robert M.; Dardoufas, Kimon C.; and Lazarus, Stanley D., to Allied Corporation. Polyester yarn finish composition. 4,397,985, Cl. 524-837.000.
Marsheck, William J.; Jiu, James; and Wang, Ping T., to G. D. Searle & Co. Microbial process for 9α-hydroxylation of steroids. 4,397,947, Cl. 435-58.000.
Martin, Brice E.: *See—*
Vanderpool, Clarence D.; Martin, Brice E.; and Gingerich, Richard G. W., 4,397,690, Cl. 75-108.000.
Martin, Otis M.: *See—*
Kough, John K.; and Martin, Otis M., 4,397,129, Cl. 52-528.000.
Martin, Patrick H.: *See—*
Campbell, Kent D.; Langer, Horst G.; and Martin, Patrick H., 4,397,970, Cl. 523-402.000.
Martin, Sylvia, to Occidental Chemical Corporation. Zinc plating baths with condensating polymer brighteners. 4,397,718, Cl. 204-55.00Y.
Martynenko, Tamara L.: *See—*
Xenzhek, Oktavian S.; Shembel, Elena M.; Litvinova, Valentina I.; Martynenko, Tamara L.; Raikhelson, Leonid B.; Sokolov, Leonid A.; and Moskovsky, Valentin Z., 4,397,921, Cl. 429-105.000.

Martynov, Igor A.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.

Marvin Glass & Associates: *See*—
Meyer, Burton C.; and Luecke, Beth E., 4,397,871, Cl. 426-5.000.

Masco Corporation: *See*—
Fathauer, George H.; and Holst, Wayne, 4,398,304, Cl. 455-168.000.
McLamore, Roy T., 4,397,355, Cl. 166-297.000.

Massachusetts Institute of Technology: *See*—
Bye, Richard, 4,397,687, Cl. 75-68.00R.
Seyferth, Dietmar; Prud'Homme, Christian C.; and Wiseman, Gary H., 4,397,828, Cl. 423-344.000.
Wurtman, Richard J., 4,397,866, Cl. 424-319.000.

Masson, Pierre L.: *See*—
Moussebois, Claude H.; Masson, Pierre L.; Vaerman, Jean-Pierre; Limet, Joseph; and Cambiaso, Cesar L., 4,397,960, Cl. 436-512.000.

Masuth, Armin: *See*—
von Hoerschelmann, Detlef; Seidel, Hans; Berger, Gerhard; Masuth, Armin; Beaucamp, Klaus; and Gruber, Wolfgang, 4,397,952, Cl. 435-190.000.

Mather, Joseph M.: *See*—
Lynnes, Carman P.; Kielb, Eugene J.; Mather, Joseph M.; Albright, Larry E.; and Hoechst, Lonnie D., 4,397,371, Cl. 180-271.000.

Mathieu, Michel; Charbonnel, Pierre; and Pacaud, Jean-Claude, to Centre National d'Etudes des Telecommunications; and Etablissement Public de Diffusion dit Telediffusion de France. Process and apparatus for digital data communication using packet switching. 4,398,290, Cl. 370-94.000.

Matra AG: *See*—
Fanti, Hansruedi, 4,397,053, Cl. 5-481.000.

Matsuda, Kiyofumi; and Eiju, Tomoaki, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Laser doppler velocimeter. 4,397,550, Cl. 356-28.500.

Matsuda, Norio: *See*—
Segawa, Keiji; Matsuda, Norio; and Murakami, Masaki, 4,398,282, Cl. 369-126.000.

Matsui, Tadashi: *See*—
Kaneda, Hiroshi; Sato, Hiroshi; Nashimoto, Katsunori; and Matsui, Tadashi, 4,397,449, Cl. 266-106.000.

Matsumiya, Toshiharu: *See*—
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,397,976, Cl. 524-178.000.

Matsumoto, Haruo: *See*—
Nishikawa, Toshio; Tamura, Sadahiro; Ishikawa, Youhei; and Matsumoto, Haruo, 4,398,164, Cl. 333-222.000.

Matsumoto, Masataka: *See*—
Waki, Masahiko; Yamagata, Hisao; Murata, Toshio; Takeuchi, Fumio; and Matsumoto, Masataka, 4,397,568, Cl. 368-321.000.

Matsunaga, Tsutomu: *See*—
Kataoka, Nobuyuki; Saito, Tasuku; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,398,000, Cl. 525-437.000.

Matsushima, Yoshihisa: *See*—
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,397,788, Cl. 260-441.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Inoue, Takao; Wakahata, Tamotsu; Maeda, Yukio; and Niboshi, Ikuo, 4,397,723, Cl. 204-159.150.

Matsushita Electric Works, Ltd.: *See*—
Tanabe, Toshio; and Yasunaka, Shinsaku, 4,397,616, Cl. 417-362.000.

Matsushita, Toshihiko: *See*—
Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, 4,397,483, Cl. 282-27.500.

Mattel, Inc.: *See*—
Ferdinand, Scott A., 4,397,211, Cl. 84-1.260.
Gable, Derek J., 4,397,465, Cl. 273-86.00D.

Matth. Hohner AG: *See*—
Deforeit, Christian J., 4,397,209, Cl. 84-1.030.

Matthews, Billie J.; Allison, John P.; Woon, Paul S.; Stevens, Robert A.; and Bornslaeger, Stephan R., to Kimberly-Clark Corporation. Sanitary napkin with improved comfort. 4,397,644, Cl. 604-378.000.

Maturo, Robert J.: *See*—
Chin, Danny; Henderson, John G. N.; and Maturo, Robert J., 4,398,303, Cl. 455-168.000.

Mauser-Werke Oberndorf GmbH: *See*—
Hupp, Gerhard, 4,397,217, Cl. 89-177.000.

Maxelon, Rainer, to Deutsche Texaco Aktiengesellschaft. Spray nozzle assembly for filter devices. 4,397,694, Cl. 134-151.000.

Maxson, Dale E., to Barber-Colman Company. Air distributor with automatically closable damper. 4,397,223, Cl. 98-40.00D.

May, John E., to General Electric Company. Varistor with tetragonal antimony zinc oxide additive. 4,397,773, Cl. 252-518.000.

Mayfield, Johnny W.; and Totten, Roger W., to Machine Cutting, Inc. Universal pipe lathe. 4,397,202, Cl. 82-4.00R.

Mayotte, David C.: *See*—
Thibault, Gilbert; and Mayotte, David C., 4,397,832, Cl. 423-474.000.

Mayumi, Hiroshi: *See*—
Tamura, Teiji; and Mayumi, Hiroshi, 4,398,266, Cl. 365-103.000.

McAllester, Spears L., to Buckeye Cellulose Corporation, The. Protective stack cover flaps for folded drapes. 4,397,309, Cl. 128-132.00D.

McBean, Rupert J. S.: *See*—
Horncy, Thomas E.; Allum, David R.; and McBean, Rupert J. S., 4,397,583, Cl. 405-150.000.

McCain, Willard E. Releasable bucket and other tool connection for backhoe. 4,397,604, Cl. 414-723.000.

McCaskey, Harold O.: *See*—
Benson, Melvin E.; and McCaskey, Harold O., 4,397,910, Cl. 428-283.000.

McClure, Richard J., to Eastman Kodak Company. Magnetic head with versatile gap. 4,398,229, Cl. 360-113.000.

McCollum, Anthony W.: *See*—
Edmonson, William L.; and McCollum, Anthony W., 4,398,034, Cl. 560-1.000.

McCormack, Ray G., to United States of America, Army. Distance measuring system. 4,397,548, Cl. 356-5.000.

McCoy, John J.: *See*—
Falcone, Samuel J.; and McCoy, John J., 4,398,036, Cl. 560-24.000.

McCubbrey, David L.: *See*—
Dargel, William O.; Lougheed, Robert M.; and McCubbrey, David L., 4,398,176, Cl. 382-27.000.

McDaniel, Bonnie G.: *See*—
Miller, Thomas G.; Hagefstration, John E.; Womack, Dennis R.; and McDaniel, Bonnie G., 4,398,294, Cl. 372-70.000.

McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Phosphate containing support for vanadium catalyst. 4,397,761, Cl. 252-429.00C.

McDaniel, Max P., to Phillips Petroleum Company. Phosphated alumina or aluminum phosphate chromium catalyst. 4,397,765, Cl. 252-430.000.

McDaniel, Max P.; Sanbrano, John A.; and Johnson, Marvin M., to Phillips Petroleum Company. Olefin polymerization catalyst. 4,397,769, Cl. 252-458.000.

McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Olefin polymerization with phosphated silica-chromium catalyst with boron-containing cocatalyst. 4,398,004, Cl. 526-98.000.

McDaniel, Max P.: *See*—
Hawley, Gil R.; and McDaniel, Max P., 4,397,766, Cl. 252-431.00R.

McDermott Incorporated: *See*—
Green, William L.; Calkins, Dennis E.; Landers, Edward A., Jr.; and Gray, Daniel W., 4,397,582, Cl. 405-137.000.

McDonald, Roderick A., to Georgia-Pacific Corporation. Fast curing novolac resin and shell molding composition and methods for producing the same. 4,397,967, Cl. 523-145.000.

McDonnell Douglas Corporation: *See*—
Hsia, Yukun; and Rodgers, Richard W., 4,398,248, Cl. 364-200.000.

McFadyen, Robert J.; Peil, William; Davenport, John M.; and Crosby, Robert J., to General Electric Company. Arc lamp lighting unit with low and high light levels. 4,398,130, Cl. 315-226.000.

McGinley, James J.: *See*—
Dilmore, Colonel R.; Raetzsch, Carl W., Jr.; and McGinley, James J., 4,397,735, Cl. 204-98.000.

McGinnis, Joseph P.: *See*—
Merwarth, Richard J.; and McGinnis, Joseph P., 4,397,229, Cl. 100-7.000.

McKay, Dwight L.: *See*—
Roberts, John S.; Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,397,767, Cl. 252-431.00P.

McKean, Dennis R.: *See*—
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; Twieg, Robert J.; and Willson, Carlton G., 4,397,937, Cl. 430-192.000.

McKelvey, Thomas H., to Inventors Collaborative, Inc., The. Dental burr holder. 4,397,395, Cl. 211-60.00T.

McKinney, Linda D.; and Jenkines, Randall C., to Dow Chemical Company, The. Fire suppressant composition and use thereof. 4,397,978, Cl. 524-409.000.

McLamore, Roy T., to Masco Corporation. Whipstock setting method and apparatus. 4,397,355, Cl. 166-297.000.

McLeod, Leon G. Agricultural slasher. 4,397,136, Cl. 56-500.000.

McMann, Renville H., Jr., to Thomson-CSF Broadcast, Inc. Audio processing apparatus and method. 4,398,061, Cl. 179-1.0VL.

McMurtry, David R., to Rolls Royce Limited; and Renishaw Electrical Limited. Probe for use in measuring apparatus. 4,397,093, Cl. 33-174.00L.

McRae, Daniel D.; Perkins, Frank A.; and Glover, Edward B., to Harris Corporation. Apparatus for privacy transmission in system having bandwidth constraint. 4,398,062, Cl. 179-1.50E.

McShane, James P.: *See*—
Beaumont, Gregory J.; Godawski, Theodore J.; McShane, James P.; and Parker, James J., 4,398,133, Cl. 315-411.000.

McDowell, Alexander W. K., to Ellicott Machine Corporation. Dredge bucket wheel structure. 4,397,106, Cl. 37-57.000.

Me-U-Sea, Inc.: *See*—
Muusse, Jay H., 4,397,080, Cl. 29-527.600.

Medlar, Lewis A., to Honeywell Inc. Fluid flow control valve with maximized noise reduction. 4,397,331, Cl. 137-375.000.

Medtronic, Inc.: *See*—
Barthel, Thomas C., 4,397,316, Cl. 128-419.0PG.

Medwed, Emmerich, to Multivac Sepp Haggenmuller KG. Method for producing containers from thermoplastic sheet material. 4,397,804, Cl. 264-292.000.

Meeker, Gregory W., to USM Corporation. Apparatus for loading and injection unit of an injection molding machine. 4,397,630, Cl. 425-582.000.

Mefina S.A.: *See*—
Fresard, Marcel; and Jentschmann, Jakob, 4,397,252, Cl. 112-299.000.

Mehlschau, James J.: *See*—
Miles, John A.; Rumsey, James W.; and Mehlschau, James J., 4,397,473, Cl. 280-6.00H.

Mehta, Arun K.; and Borio, Richard W., to Combustion Engineering, Inc. Coal beneficiation/combustion system. 4,397,248, Cl. 110-263.000.

Meier, Franz: *See*—
Kammerling, Bruno; Meier, Franz; and Schmidt, Rainer, 4,397,450, Cl. 266-193.000.

Meier, Raymond J., to General Electric Co. Feed apertures with cross-polarization compensation for linear polarization. 4,398,200, Cl. 343-756.000.

Meiji Milk Products Company Limited: *See*—
Koide, Kaoru; Yoneda, Yoshiki; and Musashi, Kenkichi, 4,397,878, Cl. 426-40.000.

Meiller, Hermann; and Kunst, Otto, to Messrs. Willibald Grammer. Vehicle seat, more specially for commercial vehicles. 4,397,501, Cl. 297-301.000.

Meito Sangyo Kabushiki Kaisha: *See*—
Miyachi, Hideki; Misaki, Akira; Kakuta, Mariko; Nakayama, Mineo; and Nagae, Hideo, 4,398,023, Cl. 536-1.100.

Mendelsohn, Marshall H.; and Gruen, Dieter M. Method of gettering hydrogen under conditions of low pressure. 4,397,834, Cl. 423-644.000.

Mepla, Inc.: *See*—
Lautenschlager, Horst; and Lautenschlager, Gerhard W., 4,397,064, Cl. 16-379.000.

Merck & Co., Inc.: *See*—
Christensen, Burton G.; Hannah, John; Leanza, William J.; and Shih, David H., 4,397,861, Cl. 424-274.000.
Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., 4,397,851, Cl. 424-250.000.
Evans, Ben E.; and Rittle, Kenneth E., 4,397,786, Cl. 260-404.000.

Merianos, John J.: *See*—
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 4,397,743, Cl. 210-735.000.

Merlack, William A.: *See*—
Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., 4,397,579, Cl. 404-60.000.

Merrill, Robert G.; Lofquist, Robert A.; Weedon, Gene C.; Haylock, John C.; and Twilley, Ian C., to Allied Corporation. Transparent copolyamide from caprolactam, cyclic diamine and cyclic dicarboxylic acid. 4,398,012, Cl. 528-84.000.

Merwarth, Richard J.; and McGinnis, Joseph P., to Harris Corporation. Stacker-tyer. 4,397,229, Cl. 100-7.000.

Merz, Kenneth M.: *See*—
Wahlers, Richard L.; and Merz, Kenneth M., 4,397,915, Cl. 428-432.000.

Messrs. Willibald Grammer: *See*—
Meiller, Hermann; and Kunst, Otto, 4,397,501, Cl. 297-301.000.

Metal Box Limited: *See*—
Baldwin, Raymond, 4,397,414, Cl. 229-5.700.

Metallgesellschaft Aktiengesellschaft: *See*—
Schwartz, Werner; and Fischer, Peter, 4,397,688, Cl. 75-77.000.

Mettetal, Bert J., to Truck Safety Systems, Inc. Steering stabilizer and quick coupling assembly. 4,397,474, Cl. 280-423.00A.

Meyer, Burton C.; and Luecke, Beth E., to Marvin Glass & Associates. Amusement device for transmitting messages. 4,397,871, Cl. 426-5.000.

Meyercord Co., The: *See*—
Gaylord, Barney G., 4,397,710, Cl. 156-475.000.

Michishita, Kazuo: *See*—
Suzuki, Go; and Michishita, Kazuo, 4,397,800, Cl. 264-61.000.

Michlin, Norman; and Thies, Edward J., to Universal Developer Corporation. Self-contained disposable developer/absorber package. 4,397,663, Cl. 55-387.000.

Micmix Audio Products, Inc.: *See*—
Rodgers, Robert L., 4,398,158, Cl. 330-136.000.

Midland-Ross Corporation: *See*—
Jacubowiez, Isidore, 4,397,600, Cl. 414-152.000.

Mieyal, David F., to Donn, Incorporated. Extendable stud for partition walls or the like. 4,397,127, Cl. 52-241.000.

Mihara, Osamu; and Kumada, Toyoji, to Sangiken Ltd., by said Toyoji Kumada. Apparatus for regenerating activated carbon. 4,398,295, Cl. 373-120.000.

Milanes, Eddy J.; Highbridge, Russell E.; and Morgan, Robert S., to Magnetic Peripherals Inc. Overlapped document detector. 4,397,460, Cl. 271-263.000.

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Ramge, Dennis L.; and Miller, John H., 4,397,692, Cl. 134-2.000.

Miller, Robert D.: *See*—
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; Twieg, Robert J.; and Willson, Carlton G., 4,397,937, Cl. 430-192.000.

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Higgins, Kenneth B., 4,397,900, Cl. 428-95.000.

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Lemonnier, Jean, 4,397,945, Cl. 435-31.000.

Millmaster Onyx Group, Inc.: *See*—
Green, Haroid A.; Merianos, John J.; and Petrocci, Alfonso N., 4,397,743, Cl. 210-735.000.

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Matsuda, Kiyofumi; and Eiju, Tomoaki, 4,397,550, Cl. 356-28.500.

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Bingham, Wallace K., 4,397,142, Cl. 57-238.000.
Christiansen, Robert W.; and Westberg, Walter M., 4,398,277, Cl. 361-220.000.

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Naruse, Kazuhiko; Yuasa, Yoshio; and Ishikawa, Norio, 4,397,533, Cl. 354-23.00D.
Sakata, Toshio; Iwao, Soichi; and Takiguchi, Shinji, 4,397,936, Cl. 430-124.000.
Yuasa, Yoshio; and Naruse, Kazuhiko, 4,397,553, Cl. 356-226.000.

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Schockman, Robert L.; Busse, Vernon E.; Wissman, Terry L.; and Schoch, Daniel A., 4,397,232, Cl. 100-214.000.

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Miyachi, Hideki; Misaki, Akira; Kakuta, Mariko; Nakayama, Mineo; and Nagae, Hideo, 4,398,023, Cl. 536-1.100.

Mishima, Michiharu; Yamamoto, Yuji; Makita, Kensuke; Sakka, Sumio; and Kamiya, Kanichi, to Central Glass Company Limited. Method of producing glass from metal alkoxide solution. 4,397,666, Cl. 65-18.300.

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Mitchell, Francis. Circulating air space heater. 4,397,292, Cl. 126-61.000.

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Imada, Yukio; Osozawa, Tetsu; Morimoto, Yuki; and Kinoshita, Masayuki, 4,397,946, Cl. 435-55.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Kimura, Hiroshi; and Kai, Junjiro, 4,397,752, Cl. 252-70.000.
Morishita, Mitsuharu, 4,398,140, Cl. 320-36.000.
Tobita, Youichi; and Nishizawa, Hiroshi, deceased, 4,398,100, Cl. 307-264.000.
Tsuchihashi, Michihiro; Suzuki, Ryo; Saito, Masato; and Watanabe, Heiji, 4,398,123, Cl. 315-46.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Suzuki, Takashi; Kitahara, Koichi; Naito, Susumu; and Tsuji, Tomoji, 4,398,040, Cl. 562-413.000.

Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See*—
Ishida, Nobuhiro; Sukekawa, Ikuo; Yasuda, Shigeo; and Yoshida, Yoshikazu, 4,397,246, Cl. 108-55.300.

Mitsubishi Paper Mills, Ltd.: *See*—
Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, 4,397,483, Cl. 282-27.500.

Mitsubishi Petrochemical Company Limited: *See*—
Doi, Shuhei; and Isaka, Tsutomu, 4,397,981, Cl. 524-465.000.

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Ishiguro, Shoji; Fuseya, Yoshiharu; Heki, Tatsuo; and Mitsui, Akio, 4,397,943, Cl. 430-609.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Nagano, Riichiro, 4,397,916, Cl. 428-461.000.

Mitsuitoatsu Chemicals Inc.: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,397,864, Cl. 424-282.000.

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Nakano, Jiro; Ono, Hironobu; and Miyagi, Hideo, 4,397,281, Cl. 123-486.000.

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Ueno, Hiroshi; Miyamatsu, Yasunori; Aizawa, Masanori; Kaga, Yasuo; and Ishibashi, Kazuhisa, 4,397,401, Cl. 220-260.000.
Miyata, Tadao: *See*—
Bahn, Itsuki; and Miyata, Tadao, 4,398,127, Cl. 315-151.000.
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Mizuta, Ken: *See*—
Kondo, Shiro; and Mizuta, Ken, 4,398,070, Cl. 200-16.00R.
Moad, Mark H., to Moad, Mark H. Stand-by heating/power supply system for a motor vehicle. 4,398,081, Cl. 219-202.000.
Mobil Oil Corporation: *See*—
Audeh, Costandi A., 4,397,352, Cl. 166-260.000.
Caldwell, Richard L., 4,397,181, Cl. 73-152.000.
Chibnik, Sheldon, 4,397,750, Cl. 252-51.50A.
Chu, Pochen, 4,397,827, Cl. 423-326.000.
Ketkar, Anil B., 4,397,656, Cl. 48-202.000.
Marien, Bruce A., 4,397,972, Cl. 524-109.000.
Miller, Henry W., 4,397,484, Cl. 285-81.000.
Osborn, Paul V., 4,397,703, Cl. 156-177.000.
Schoepf, Victor L., 4,398,191, Cl. 340-825.320.
Sherman, Anthony M., 4,397,988, Cl. 525-98.000.
Yan, Tsoung-Yuan; and Espenscheid, Wilton F., 4,397,819, Cl. 423-7.000.
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Winkler, Louis T.; Goins, John D.; St. Pierre, George R.; Mobley, Carroll E.; and Shumaker, Craig B., 4,397,686, Cl. 75-63.000.
Moffitt, Richard D. Portable outdoorsman's seat. 4,397,500, Cl. 297-118.000.
Mohan, Anand; and de Hek, Johan A. Process of manufacturing screen material. 4,397,715, Cl. 204-11.000.
Mokhov, Jury M.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.
Molins, Desmond W.: *See*—
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Molins Limited: *See*—
Hinchcliffe, Dennis; and Molins, Desmond W., 4,397,457, Cl. 271-12.000.
Labbe, Francis A. M., 4,397,320, Cl. 131-84.00R.
Molko, William P., to Dittmar & Penn Corp. Clip applying forceps. 4,397,312, Cl. 128-325.000.
Moll, Franz: *See*—
von Konig, Anita; Moll, Franz; and Oediger, Hermann, 4,397,942, Cl. 430-446.000.
Mollet, Jean-Paul, to Flonic S.A. Vortex flowmeters. 4,397,192, Cl. 73-861.220.
Monahan, Jack J.: *See*—
Booth, Raymond H.; Monahan, Jack J.; and Schneider, Fred J., 4,397,385, Cl. 198-345.000.
Monsanto Company: *See*—
Harris, Alva F., 4,397,975, Cl. 524-155.000.
Houbion, John A., 4,397,790, Cl. 260-936.000.
Johnson, John H., 4,397,841, Cl. 424-101.000.
King, Duane E.; and O'Brien, John R., 4,397,661, Cl. 55-158.000.
Oftedahl, Marvin L.; Solomon, Howard M.; and Webster, James A., 4,397,995, Cl. 525-374.000.
Serlin, Irving, 4,397,883, Cl. 427-14.100.
Montres Rado S.A.: *See*—
Lederrey, Marc, 4,397,566, Cl. 368-291.000.
Moore, Henry J., Jr.; and Bressickello, Lindy J., to Mor Flo Industries, Inc. Water heater with submerged combustion chamber. 4,397,296, Cl. 126-360.00A.
Moore, Jerry W.; and Allen, James, to Pennzoil Company. Grinding apparatus. 4,397,425, Cl. 241-169.100.
Moore, Morris A.; and Braun, William V., to Motorola Inc. Battery-saving arrangement for pagers. 4,398,192, Cl. 340-825.440.
Moore, Richard A.: *See*—
Stolz, Theodore O.; Moore, Richard A.; and Lutz, James P., 4,397,966, Cl. 521-167.000.
Moore, Sanders H.; and Smith, Maurice R., to Olin Corporation. Removal of chlorate and hypochlorite from electrolyte cell brine. 4,397,720, Cl. 204-98.000.
Mor Flo Industries, Inc.: *See*—
Moore, Henry J., Jr.; and Bressickello, Lindy J., 4,397,296, Cl. 126-360.00A.
Moran, Eric, to P.V. Trim Limited. Laterally curved decorative trim strip assembly and method of making same. 4,397,896, Cl. 428-31.000.
Moran, Joseph M., to Bell Telephone Laboratories, Incorporated. Apparatus and method for plasma-assisted etching of wafers. 4,397,724, Cl. 204-192.00E.
Moravnik, Zvi. Non-focusing solar energy concentrator. 4,397,302, Cl. 126-440.000.
Morgan, Chester S. Method for fabricating cermets of alumina-chromium systems. 4,397,963, Cl. 501-127.000.
Morgan, Clifford E., to United States of America, Army. Method for removal of LIDAR background backscattering by subtraction of multiple-delayed return signal. 4,397,549, Cl. 356-5.000.
Morgan, Robert S.: *See*—
Milanes, Eddy J.; Highbridge, Russell E.; and Morgan, Robert S., 4,397,460, Cl. 271-263.000.
Mori, Koukichi, to Kabushiki Kaisha Morico. Automatic numbering assembly. 4,397,233, Cl. 101-35.000.
Mori, Leo: *See*—
Akai, Yoshimi; Taya, Akira; Mori, Leo; Narita, Kazuo; and Hirose, Masahiko, 4,397,885, Cl. 427-38.000.
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, to Sekisui Kagaku Kogyo Kabushiki Kaisha; and Tokuyama Sekisui Kogyo Kabushiki Kaisha. Interlayer for laminated safety glass. 4,397,976, Cl. 524-178.000.
Morimoto, Hiroshi; Inoue, Hajime; and Ueda, Kazuo, to Central Glass Company, Limited. Method of coloring glass sheet by diffusion and reduction of silver ions. 4,397,667, Cl. 65-30.130.
Morimoto, Yuki: *See*—
Imada, Yukio; Osozawa, Tetsu; Morimoto, Yuki; and Kinoshita, Masayuki, 4,397,946, Cl. 435-55.000.
Morini, Cesare. Piston, in particular for olympic fifty meter competition shooting. 4,397,111, Cl. 42-73.000.
Morishita, Mitsuharu, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for charging generator. 4,398,140, Cl. 320-36.000.
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Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, 4,397,483, Cl. 282-27.500.
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Morrill, Wayne J. Reversible lubrication system for dynamoelectric machine. 4,397,571, Cl. 384-397.000.
Morrison, Donald R. Vibrating screed and curb/gutter forming apparatus and method. 4,397,580, Cl. 404-72.000.
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Moscovich, Ivan. Ball game. 4,397,463, Cl. 273-1.0GE.
Moskovsky, Valentin Z.: *See*—
Xenzhek, Oktavian S.; Shembel, Elena M.; Litvinova, Valentina I.; Martynenko, Tamara L.; Raikhelson, Leonid B.; Sokolov, Leonid A.; and Moskovsky, Valentin Z., 4,397,921, Cl. 429-105.000.
Mostek Corporation: *See*—
Taylor, Ronald T., 4,398,270, Cl. 365-203.000.
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Atwell, William D., Jr.; and Belleville, Marc, 4,398,155, Cl. 328-73.000.
Derzawiec, Edward; Nelson, Wade H.; and Petty, Cleon, 4,398,103, Cl. 307-454.000.
Moore, Morris A.; and Braun, William V., 4,398,192, Cl. 340-825.440.
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Puhl, Larry C.; and Connell, Lawrence E., 4,398,265, Cl. 364-900.000.
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Moussebois, Claude H.; Masson, Pierre L.; Vaerman, Jean-Pierre; Limet, Joseph; and Cambiaso, Cesar L., to Technicon Instruments Corporation. Immunoassays using $F(AB')_2$ fragments. 4,397,960, Cl. 436-512.000.
Mowbray, Dorian F., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,397,615, Cl. 417-221.000.
Mroszczak, Edward; and Runkel, Richard, to Syntex (U.S.A.) Inc. Gastrointestinal sparing thioester drugs. 4,397,862, Cl. 424-274.000.
Mu, Jacob J.: *See*—
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Muller, Ernst, to Gessner AG. Device for removing contaminating matter in jacquard weaving machines. 4,397,339, Cl. 139-1.00C.
Muller, Felix: *See*—
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Muller, Gerhard, to Carl Zeiss-Stiftung. Material-testing method and apparatus. 4,397,556, Cl. 356-301.000.
Muller, Rolf, to Papst-Motoren KG. Two-pulse permanent magnet brushless D-C motor. 4,398,134, Cl. 318-254.000.
Mullich, Richard O.: *See*—
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Multivac Sepp Haggenmuller KG: *See*—
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Murano, Hiroshi; and Akino, Moritoshi, to Nippon Electric Co., Ltd. Integrated circuit chip package for logic circuits. 4,398,208, Cl. 357-81.000.

Murase, Hiroshi: *See*—
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Murata Manufacturing Co., Ltd.: *See*—
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Murayama, Satoshi: *See*—
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Murtha, Marlyn J. Process for the recovery of alumina from fly ash. 4,397,822, Cl. 423-111.000.

Musashi, Kenkichi: *See*—
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Musgrave, Daniel D. Interacting spring assembly. 4,397,108, Cl. 42-50.000.

Mutsaers, Cornelis A. H. A.: *See*—
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Mutschler, Erich: *See*—
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Muusse, Jay H., to Me-U-Sea, Inc. Process for preparation of support tooling for extrusion dies. 4,397,080, Cl. 29-527.600.

Myers, E. Gary: *See*—
Story, Julian R.; and Myers, E. Gary, 4,397,760, Cl. 252-370.000.

Myers, Peter L.: *See*—
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Nabisco Brands, Inc.: *See*—
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Nadelson, Jeffrey; and Brand, Leonard J., to Sandoz, Inc. Isoxazolyl indolamines. 4,397,850, Cl. 424-248.400.

Nagae, Hideo: *See*—
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Nagai, Takesumi, to NGK Spark Plug Co., Ltd. Ladder-type piezoelectric filters. 4,398,162, Cl. 333-189.000.

Nagano, Riichiro, to Mitsui Petrochemical Industries, Ltd. Laminated multilayer structure. 4,397,916, Cl. 428-461.000.

Nagarajan, Arunachala; and Sarkary, Homi G., to International Business Machines Corp. Process for improving the yield of integrated devices including Schottky barrier diodes. 4,397,079, Cl. 29-576.00B.

Nagashima, Yukio: *See*—
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Naito, Nagayoshi: *See*—
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Naito, Susumu: *See*—
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Naitoh, Masataka; Urano, Susumu; Kuroda, Minoru; Kojima, Yasuhumi; and Tsukahara, Kenji, to Nippondenso Co., Ltd. Malfunction procedure indicating system and method. 4,398,258, Cl. 364-551.000.

Nakagawa, Toshiaki, to Yoshida Kogyo K. K. Device for holding a slider for a slide fastener. 4,397,454, Cl. 269-49.000.

Nakagawa, Yoshihiro; and Yuura, Hachirou, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Multilayer structural building material. 4,397,906, Cl. 428-195.000.

Nakagiri, Takashi: *See*—
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Nakamura, Iwao, to Futaba Denshi Kogyo K.K. Apparatus for positioning and aligning dies. 4,397,094, Cl. 33-181.00R.

Nakano, Jiro; Ono, Hironobu; and Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic control device for an automobile. 4,397,281, Cl. 123-486.000.

Nakao, Takashi: *See*—
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Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, to Mitsuitoatsu Chemicals Inc. 2-Arylpropyl ether or thioether derivatives and insecticidal and acaricidal agents containing said derivatives. 4,397,864, Cl. 424-282.000.

Nakayama, Mineo: *See*—
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Namboodri, Chettoor G.: *See*—
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Narita, Kazuo: *See*—
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Naruse, Kazuhiko; Yuasa, Yoshio; and Ishikawa, Norio, to Minolta Camera Kabushiki Kaisha. Photographic light measuring device. 4,397,533, Cl. 354-23.00D.

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National Research Development Corporation: *See*—
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National-Standard Company: *See*—
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Nava, Pier L. Device for the controlled lifting of helmet visors and the like. 4,397,047, Cl. 2-424.000.

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Honnigford, Edward H.; and Dham, Vinod K., 4,397,076, Cl. 29-571.000.
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Paganini, Bruno J.; Anavil, Yodhin; Hale, William J.; and Lee, Kwang H., 4,398,257, Cl. 364-550.000.
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Greiner, Harry M.; Holl, Roland; Neberle, Klaus; and Abendroth, Paul, 4,397,236, Cl. 101-350.000.

Neidorff, Robert A., to Motorola, Inc. Current mirror circuits with field effect transistor feedback. 4,398,160, Cl. 330-288.000.

Neil, Iain A., to Barr & Stroud Limited. Afocal refractor telescopes. 4,397,520, Cl. 350-1.400.

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Gordy, John, 4,397,712, Cl. 162-19.000.

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Suzuki, Go; and Michishita, Kazuo, 4,397,800, Cl. 264-61.000.

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Nagai, Takesumi, 4,398,162, Cl. 333-189.000.

Niboshi, Ikuo: *See*—
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Hotta, Toshinori; and Takimoto, Yukio, 4,398,291, Cl. 370-104.000.
Murano, Hiroshi; and Akino, Moritoshi, 4,398,208, Cl. 357-81.000.
Tamura, Teiji; and Mayumi, Hiroshi, 4,398,266, Cl. 365-103.000.

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Uemura, Seiichi; Yamamoto, Shunichi; and Hirose, Takao, 4,397,830, Cl. 423-447.100.
Nippon Soken, Inc.: *See*—
Inagaki, Mitsuo; and Sasaya, Hideaki, 4,397,620, Cl. 418-141.000.
Nippon Steel Corporation: *See*—
Kaneda, Hiroshi; Sato, Hiroshi; Nashimoto, Katsunori; and Matsui, Tadashi, 4,397,449, Cl. 266-106.000.
Takahashi, Nobuyuki; and Furuno, Yoshikuni, 4,397,699, Cl. 148-12.00C.
Nippondenso Co., Ltd.: *See*—
Naitoh, Masataka; Urano, Susumu; Kuroda, Minoru; Kojima, Yasuhumi; and Tsukahara, Kenji, 4,398,258, Cl. 364-551.000.
Tanaka, Toshio; and Makino, Tomoatsu, 4,397,290, Cl. 123-618.000.
Nishikawa, Teruo, to Alps Electric Co., Ltd. Switch assembly for variable resistor. 4,398,170, Cl. 338-198.000.
Nishikawa, Toshio; Tamura, Sadahiro; Ishikawa, Youhei; and Matsumoto, Haruo, to Murata Manufacturing Co., Ltd. Coaxial resonator. 4,398,164, Cl. 333-222.000.
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Makimoto, Toshio; and Nishimura, Sadahiko, 4,398,199, Cl. 343-700.0MS.
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Watanabe, Morio; Nishimura, Sanji; and Watanabe, Nobuatsu, 4,397,682, Cl. 75-0.50A.
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Tanaka, Yoshiro; Moroi, Hayato; Kamatsu, Yukihiko; Akagi, Kazuo; Shitamatsu, Ryujiro; and Nishimura, Tadashi, 4,397,328, Cl. 134-76.000.
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Nissan Chemical Industries Ltd.: *See*—
Tsubaki, Kazumi; Koto, Noriaki; and Abe, Toyohiko, 4,398,006, Cl. 526-127.000.
Nissan Motor Co., Ltd.: *See*—
Aoyama, Shunichi, 4,397,270, Cl. 123-90.160.
Hayashida, Tsutomu, 4,397,276, Cl. 123-342.000.
Kosaka, Katsuaki; and Kawasaki, Kazunori, 4,397,149, Cl. 60-254.000.
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Ouchi, Toshiki, 4,397,480, Cl. 280-777.000.
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Yasuhara, Seishi, 4,397,280, Cl. 123-449.000.
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Schwenzer, Alfred F., 4,397,709, Cl. 156-351.000.
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Nohren, John E., Jr. Manufacturing system and transport assembly. 4,397,384, Cl. 198-341.000.
Nojiri, Akio; Koreeda, Toshio; and Horiguch, Masao, to Furukawa Electric Co., Ltd., The; and Furukawa Metals Co., Ltd. Method for extrusion coating of a pipe with a foamed cover layer having three integrally formed cellular sub-layers. 4,397,797, Cl. 264-45.500.
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Noland, Wayne B.; and Noland, Larry F. Freeze protected livestock watering device. 4,397,266, Cl. 119-73.000.
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Johansson, Lars S.; and Nordqvist, Bert S., 4,397,418, Cl. 237-59.000.
Normand, Gerard, to Societe Anonyme dite Compagnie Industrielle Des Telecommunications Cit-Alcatel. Apparatus for constituting a rotary magnetic brush. 4,397,539, Cl. 355-3.0DD.
Normier, Gerard: *See*—
d'Hinterland, Lucien D.; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 4,397,838, Cl. 424-92.000.
North American Mfg. Corp.: *See*—
Landry, Archie C., 4,397,110, Cl. 42-65.000.
North, Joe E. Pin-router mounting device and method. 4,397,342, Cl. 144-1.00F.
North, Paul C., to GTI Corporation. System for handling axial lead components that have low ratio of paramagnetism to weight. 4,397,602, Cl. 414-415.000.
Northern Telecom Inc.: *See*—
Bumgardner, Donald L., 4,398,166, Cl. 335-212.000.
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Bage, Marc; and Lemay, Johanne, 4,397,551, Cl. 356-73.100.
Novatome: *See*—
Presciuttini, Leonardo, 4,397,811, Cl. 376-405.000.
Noyon, Gustave, to Societe d'Ingenierie des Transports. Convertible rail-highway vehicle. 4,397,601, Cl. 414-345.000.
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Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf, 4,398,042, Cl. 568-62.000.
O & K Company Ltd.: *See*—
Kinoshita, Keizo; Murakami, Koji; and Ohta, Hitoshi, 4,397,451, Cl. 266-252.000.
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Danielson, David J.; and Golbeck, Bernard J., 4,398,074, Cl. 200-302.000.
O'Brien, Dennis E.: *See*—
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O'Brien, John R.: *See*—
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Martin, Sylvia, 4,397,718, Cl. 204-55.00Y.
Occidental Oil Shale, Inc.: *See*—
Hines, Alex E., 4,397,502, Cl. 299-2.000.
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Hard, Robert A.; and Mu, Jacob J., 4,397,826, Cl. 423-304.000.
O'Connor, Edward P.: *See*—
Serry, Frank; and O'Connor, Edward P., 4,398,212, Cl. 358-93.000.
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von Konig, Anita; Moll, Franz; and Oediger, Hermann, 4,397,942, Cl. 430-446.000.
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Ogawa, Mutsuo, to Ricoh Company, Ltd. Facsimile apparatus. 4,398,222, Cl. 358-287.000.
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Chiba, Haruo; Sekiguchi, Yukichi; and Ohkubo, Takashi, 4,397,178, Cl. 73-114.000.
Ohshima, Noboru: *See*—
Takeuchi, Yasumasa; Yoshimura, Yoshito; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsuji, Akira, 4,397,994, Cl. 525-332.300.
Ohta, Hitoshi: *See*—
Kinoshita, Keizo; Murakami, Koji; and Ohta, Hitoshi, 4,397,451, Cl. 266-252.000.
Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, to Hitachi, Ltd. Garnet film for magnetic bubble element. 4,397,912, Cl. 428-336.000.
Ohya, Eizaburo, to Toyo Kogyo Co., Ltd. Joint construction of pipeline. 4,397,486, Cl. 285-368.000.
Okabe, Kyoji: *See*—
Hamada, Takao; Tsuchiya, Nobuo; Inatani, Toshihiro; Takada, Yoshiyasu; Sumito, Mitsuo; Katayama, Eiji; Koitabashi, Toshimitsu; Okabe, Kyoji; and Ito, Yo, 4,397,691, Cl. 75-123.00B.
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Okamoto, Takeshi: *See*—
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Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, to Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Sato, Susumu. Plant growth regulators. 4,397,678, Cl. 71-72.000.
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Moore, Sanders H.; and Smith, Maurice R., 4,397,720, Cl. 204-98.000.
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Olsson, Billy E., to AMP Incorporated. Sealed electrical contact assembly and actuating mechanism therefor. 4,398,069, Cl. 200-6.00R.

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Taira, Akio, 4,397,529, Cl. 350-526.000.

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Ouchi, Toshiki, to Nissan Motor Co., Ltd. Instrument panel concealing plate structure. 4,397,480, Cl. 280-777.000.

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Go, Santos W., 4,398,017, Cl. 528-173.000.

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Felice, Klaus M., 4,397,768, Cl. 252-432.000.

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Moran, Eric, 4,397,896, Cl. 428-31.000.

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Muller, Rolf, 4,398,134, Cl. 318-254.000.

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Smith, Jon D.; and Parker, Glenn T., 4,397,595, Cl. 411-15.000.

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Jelinek, Jerry G., 4,397,446, Cl. 251-309.000.

Parker, James J.: *See*—
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Parr, David T., to BICC Public Limited Company. Optical fibre connector. 4,397,522, Cl. 350-96.210.

Parten, Bruce D., to Polyvend Inc. Method of forming laminated foam counter and table tops. 4,397,798, Cl. 264-46.500.

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Pasierb, John J., Jr.; and Ghosh, Atish, to Bally Manufacturing Corporation. Line buffer system for displaying multiple images in a video game. 4,398,189, Cl. 340-721.000.

Passaro, Robert E., to Andros Analyzers Incorporated. Temperature compensated gas analyzer. 4,398,091, Cl. 250-343.000.

Pastva, John V., to Eastern Company, The. Closure control mechanism. 4,397,488, Cl. 292-210.000.

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Zuchtriegel, Anton, 4,398,126, Cl. 315-127.000.

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Pease, Andrew Mason: *See*—
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Moore, Jerry W.; and Allen, James, 4,397,425, Cl. 241-169.100.
Pentwyn Precision, Ltd.: *See*—
Davies, Gerald B.; and Shea, Roger J., 4,397,137, Cl. 57-22.000.
Peredery, Valery P.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.
Perfilov, Viktor V.: *See*—
Bansevichus, Ramutis J.; Gapshis, Vladas-Algis A.; Kasparaitis, Albinas J.; Perfilov, Viktor V.; and Ragauskas, Alvidas J., 4,397,188, Cl. 73-651.000.
Perform, Inc.: *See*—
Patton, Lawrence C., 4,397,225, Cl. 98-66.00R.
Pergande, Michael W.; and Giusto, Anthony, to Coca-Cola Company, The. Fast food carryout package. 4,397,393, Cl. 206-549.000.
Perkin-Elmer Corp., The: *See*—
Wiesner, John C.; and Veneklasen, Lee H., 4,397,611, Cl. 417-49.000.
Perkins, Frank A.: *See*—
McRae, Daniel D.; Perkins, Frank A.; and Glover, Edward B., 4,398,062, Cl. 179-1.50E.
Peroxid-Chemie GmbH: *See*—
Doetsch, Werner; and Fuchs, Paul-Wilhelm, 4,397,833, Cl. 423-581.000.
Perr, Clarence D.: *See*—
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., 4,398,216, Cl. 358-121.000.
Pesa, Frederick A.; Graham, Anne M.; and Kliewer, Wayne R., to Standard Oil Company, The. Hydrogenation of carboxylic acids. 4,398,039, Cl. 560-265.000.
Peters, Joseph H., to U.S. Philips Corporation. Method of and arrangement for digitizing a time-discrete video signal using a picture transform coding. 4,398,217, Cl. 358-138.000.
Peters, Peter J. H.; and Kerkhoofs, Pieter L., to Stamicarbon, B.V. Preparation and immobilization of inulinase. 4,397,949, Cl. 435-99.000.
Petersen, Stephen K., to Sheldahl, Inc. Membrane switch having adhesive label as edge seal. 4,397,082, Cl. 29-622.000.
Petrocci, Alfonso N.: *See*—
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 4,397,743, Cl. 210-735.000.
Petroworld, Ltd.: *See*—
Carver, Herman C., 4,397,494, Cl. 294-86.100.
Petty, Cleon: *See*—
Derzawiec, Edward; Nelson, Wade H.; and Petty, Cleon, 4,398,103, Cl. 307-454.000.
Pfeiler, Manfred, to Siemens Aktiengesellschaft. X-Ray diagnostic system comprising a radiographic unit with an x-ray tube which can emit a fan-shaped radiation beam. 4,398,302, Cl. 378-146.000.
Pfister, Hans; Knaisch, Otto; and Blanc, Jean-Marc, to Swiss Aluminium Ltd. Device for conducting electric current between electrolytic cells. 4,397,728, Cl. 204-243.00M.
Pfizer Inc.: *See*—
Kellogg, Michael S.; and Hamanaka, Ernest S., 4,397,783, Cl. 260-245.20R.
Phelan, Charles S.; and Fort, Jacob R., to Shur-Lok Corporation. Coaxial direct-coupled ultrasonic probe and method of non-destructive testing. 4,397,186, Cl. 73-584.000.
Phillips, Edward L., to Sybron Corporation. Electrically neutral nonpermselective porous membrane. 4,397,908, Cl. 428-243.000.
Phillips Petroleum Company: *See*—
Hawley, Gil R.; and McDaniel, Max P., 4,397,766, Cl. 252-431.00R.
Koontz, Stephen L., 4,397,740, Cl. 208-482.000.
Low, Jim Y., 4,397,736, Cl. 208-11.0LE.
McDaniel, Max P.; and Johnson, Marvin M., 4,397,761, Cl. 252-429.00C.
McDaniel, Max P., 4,397,765, Cl. 252-430.000.
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McDaniel, Max P.; and Johnson, Marvin M., 4,398,004, Cl. 526-98.000.
Roberts, John S.; Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,397,767, Cl. 252-431.00P.
Tabler, Donald C.; and Johnson, Marvin M., 4,398,052, Cl. 585-845.000.
Warzel, F. Morgan, 4,397,731, Cl. 208-8.0LE.
Welch, M. Bruce, 4,397,763, Cl. 252-429.00B.
Phillips Temro, Inc.: *See*—
Kelling, Gordon L., 4,397,288, Cl. 123-557.000.
Physics International Company: *See*—
O'Neill, Cormac G., 4,397,285, Cl. 123-502.000.
Pibernat, Thierry. Heating apparatus comprising a heat recovery apparatus. 4,397,293, Cl. 126-69.000.
Pickard, Jurgen; and Frank, Jurgen, to Daimler-Benz Aktiengesellschaft. Vane of a vane pump for hydraulic operating medium. 4,397,621, Cl. 418-236.000.
Picquendar, Jean-Edgar: *See*—
Benoit-Gonin, Roger; Berger, Jean-Luc; Coutures, Jean-Louis; Forster, Daniel; and Picquendar, Jean-Edgar, 4,398,099, Cl. 307-246.000.
Pierard, Jocelyn. Method and apparatus for liquefying and/or heating a fluid. 4,397,287, Cl. 123-557.000.
Pierre Fabre S.A.: *See*—
d'Hinterland, Lucien D.; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 4,397,838, Cl. 424-92.000.
Pilo, Claes W. Rotary gas washers. 4,397,794, Cl. 261-79.00A.
Pinel, Anne-Marie: *See*—
d'Hinterland, Lucien D.; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 4,397,838, Cl. 424-92.000.
Pinson, Paul I. Fishing rod holder and hook setting device. 4,397,113, Cl. 43-15.000.
Pinto, Albert A.; and Ryder, George, to Nabisco Brands, Inc. Extrusion cylinder assembly. 4,397,628, Cl. 425-376.00B.
Piotrowski, Eugene G. Popcorn popping. 4,397,874, Cl. 426-450.000.
Piscitelli, R. Amelia: *See*—
Bickos, John G.; Warren, Gilbert G.; and Piscitelli, R. Amelia, 4,397,086, Cl. 29-876.000.
Pitney Bowes Inc.: *See*—
Couper, Robert A.; and Denning, Bruce S., 4,398,264, Cl. 364-900.000.
Frediani, John K.; Johnson, Richard E.; and Lillie, Terrance L., 4,398,246, Cl. 364-200.000.
Jurkowski, Walter J., 4,397,693, Cl. 134-6.000.
Place, Theodore W., to Garrett Corporation, The. Apparatus and method for centrifuging. 4,397,637, Cl. 494-1.000.
Plastican, Incorporated: *See*—
Blanchette, Henry J., 4,397,404, Cl. 220-306.000.
Poclain: *See*—
Dion, Daniel J.; and Ranini, Daniel G., 4,397,481, Cl. 280-781.000.
Podhrasky, Robert J., to Garrett Electronics. Low drift tuning circuit. 4,398,104, Cl. 307-490.000.
Poe, Joseph P. Christmas tree display stand. 4,397,895, Cl. 428-18.000.
Pohl, Klaus: *See*—
Raasch, Hans; Lenzen, Jakob; and Pohl, Klaus, 4,397,144, Cl. 57-414.000.
Pokhodenko, Vitaly D.; Koshechko, Vyacheslav G.; Barchuk, Vladimir I.; and Isagulov, Kim S. Chemical power supply. 4,397,922, Cl. 429-105.000.
Poklacki, Brian L.: *See*—
Miller, Anthony J.; and Poklacki, Brian L., 4,397,509, Cl. 312-320.000.
Polaroid Corporation: *See*—
Chiklis, Charles K.; and Schuler, Alan N., 4,397,996, Cl. 525-380.000.
Polyeth Marketing Proprietary Limited: *See*—
Hill, Edward T.; Kaplan, Bernard L.; and Farkas, Paul V., 4,397,983, Cl. 524-790.000.
Polyvend Inc.: *See*—
Parten, Bruce D., 4,397,798, Cl. 264-46.500.
Pomeranzeff, Oleg, to United States of America, Health and Human Services. Anastigmatic high magnification, wide-angle binocular indirect attachment for laser photocoagulator. 4,397,310, Cl. 128-303.100.
Porrmann, Herbert; Heidel, Peter; and Stenger, Karl, to Hoechst Aktiengesellschaft. Tubular casing suitable for foodstuffs and process for its manufacture. 4,397,337, Cl. 138-118.100.
Porter, William F.; and Janninck, Donald R., to United States Gypsum Company. Apparatus for the production of mineral fibers by means of rotating discs. 4,397,623, Cl. 425-8.000.
Postlethwaite, Dennis: *See*—
Bright, Samuel C.; and Postlethwaite, Dennis, 4,397,757, Cl. 252-186.410.
Pottier, Bernard. Superhigh-frequency duplex mode telecommunications device. 4,398,283, Cl. 370-30.000.
Pouchol, Jean-Marie, to Rhone-Poulenc Industries. Aqueous dispersions of polyvinylbutyral having low content of hydrosolubles. 4,397,969, Cl. 523-310.000.
PPG Industries, Inc.: *See*—
Dilmore, Colonel R.; Raetzsch, Carl W., Jr.; and McGinley, James J., 4,397,735, Cl. 204-98.000.
Fahey, Dennis M., 4,397,913, Cl. 428-369.000.
Misura, Michael S., 4,398,008, Cl. 526-314.000.
Stevens, Stephen, 4,397,673, Cl. 65-374.110.
Premerlani, William J., to General Electric Company. Polyphase angle estimator. 4,398,255, Cl. 364-492.000.
Presciuttini, Leonardo, to Novatome. Nuclear reactor with integral heat exchangers. 4,397,811, Cl. 376-405.000.
Prevorsek, Dusan C.: *See*—
Akkapeddi, Murali K.; DeBona, Bruce T.; Lai, Yu-Chin; and Prevorsek, Dusan C., 4,398,018, Cl. 528-176.000.
Price, David S.; Schafer, Richard A.; and Kittle, Carl E., to Deere & Company. Tractor hitch with yoke having pivotally supported upper end. 4,397,359, Cl. 172-430.000.
Priepke, Edward H.: *See*—
Lausch, H. Nevin; and Priepke, Edward H., 4,397,134, Cl. 56-98.000.
Prinsze, Onno M. Rechargeable flashlight combined with a constant current battery charging circuit. 4,398,139, Cl. 320-2.000.
Process Engineering Company S A: *See*—
Guazzone, Bruno; and Muller, Felix, 4,397,953, Cl. 435-243.000.
Procter & Gamble Company, The: *See*—
Buell, Kenneth B., 4,397,645, Cl. 604-380.000.
Riley, Dennis P., 4,397,787, Cl. 260-429.00R.
Ward, James F., 4,397,776, Cl. 252-527.000.
Prohaska, Hans: *See*—
Busch, Gerhard; Jakob, Heinz; Jendrzejewski, Reiner; Klement, Heribert; Prohaska, Hans; Schmid, Eckhardt; and Schneider, Theodor, 4,398,135, Cl. 318-443.000.

Protsenko, Valery V.: *See—*
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.

Prud'Homme, Christian C.: *See—*
Seyferth, Dietmar; Prud'Homme, Christian C.; and Wiseman, Gary H., 4,397,828, Cl. 423-344.000.

Puhl, Larry C.; and Connell, Lawrence E., to Motorola, Inc. Keyboard and display interface adapter architecture. 4,398,265, Cl. 364-900.000.

Pylon Company, Inc.: *See—*
Cooney, James S., 4,397,519, Cl. 339-255.00R.

PyMaH Corporation: *See—*
Hof, Craig R.; Ulin, Roy A.; and Nickoloff, Dennis, 4,397,570, Cl. 374-162.000.

Quaranta, Anthony A. Portable record storage container. 4,397,388, Cl. 206-309.000.

Quartz et Electronique: *See—*
Gagnepain, Jean-Jacques; Hauden, Daniel; Coquerel, Roger; and Pegeot, Claude, 4,398,115, Cl. 310-313.00A.

Quayle, Joshua C., to Imperial Chemical Industries Limited. Electrical resistance measurement. 4,398,145, Cl. 324-62.000.

Queneau, Paul B.: *See—*
Beckstead, Leo W.; and Queneau, Paul B., 4,397,821, Cl. 423-58.000.

R. Alkan & Cie: *See—*
Guitaut, Philippe P.; and Coutin, Pierre F., 4,397,433, Cl. 244-137.00R.

Raaf, Helmut; Harth, Helmut; and Wagner, Helmar R., to Blendax-Werke R. Schneider GmbH & Co. Process and composition for the remineralization and prevention of demineralization of animal teeth including humans. 4,397,837, Cl. 424-51.000.

Raasch, Hans; Lenzen, Jakob; and Pohl, Klaus, to W. Schlafhorst & Co. Open-end spinning device. 4,397,144, Cl. 57-414.000.

Rabe, Gert: *See—*
Killat, Ulrich; Rabe, Gert; and Schmitt, Hans J., 4,397,930, Cl. 430-50.000.

Rabinowitz, Mario: *See—*
Bahder, George; and Rabinowitz, Mario, 4,397,807, Cl. 264-512.000.

Radomski, Michael A.: *See—*
Feldman, Paul S.; Burge, Joseph C.; Radomski, Michael A.; and Tameo, Robert P., 4,397,471, Cl. 277-27.000.

Raetzsch, Carl W., Jr.: *See—*
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Rafferty, Michael: *See—*
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Ragauskas, Alvidas J.: *See—*
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Ragen Precision Industries, Inc.: *See—*
Lopata, Ira; and Barto, Robert M., Jr., 4,397,541, Cl. 355-14.0SH.

Raikhelson, Leonid B.: *See—*
Xenzhek, Oktavian S.; Shembel, Elena M.; Litvinova, Valentina I.; Martynenko, Tamara L.; Raikhelson, Leonid B.; Sokolov, Leonid A.; and Moskovsky, Valentin Z., 4,397,921, Cl. 429-105.000.

Ramaratnam, Krishnaswamy; and Natarajan, Kuzhumani M., to Wheels India Ltd. Manufacture of rims for the wheels of road vehicles. 4,397,345, Cl. 152-406.000.

Ramge, Dennis L.; and Miller, John H., to Manville Service Corporation. Method for the reclamation of glass fiber from scrap fiber glass mat. 4,397,692, Cl. 134-2.000.

Ramsay, John D. F.: *See—*
Cairns, James A.; Woodhead, James L.; and Ramsay, John D. F., 4,397,770, Cl. 252-465.000.

Ranini, Daniel G.: *See—*
Dion, Daniel J.; and Ranini, Daniel G., 4,397,481, Cl. 280-781.000.

Rapoport, Henry: *See—*
Bender, Dean R.; Hearst, John E.; and Rapoport, Henry, 4,398,031, Cl. 549-282.000.

Rapseik, Christopher S., to Avon Products, Inc. Safety earnut. 4,397,067, Cl. 24-108.000.

Raskin, Iosif A.: *See—*
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; Peredery, Valery P.; Mokhov, Jury M.; Dyachenko, Vladimir K.; Finkelshtein, Evgenia G.; Martynov, Igor A.; Kudryavtsev, Alexandr S.; Protsenko, Valery V.; and Filipchenko, Gennady G., 4,397,367, Cl. 180-117.000.

Rasmussen GmbH: *See—*
Sauer, Heinz; and Stichel, Willi, 4,397,066, Cl. 24-20.00R.

Rasselstein AG: *See—*
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Raudenbusch, Werner T.: *See—*
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,397,990, Cl. 525-167.000.

Ray-O-Vac Corporation: *See—*
Magahed, El-Sayed A., 4,397,925, Cl. 429-207.000.

Ray, Richard J., Jr., to Manville Service Corporation. Thick batt of fibrous insulation. 4,397,898, Cl. 428-43.000.

Raychem Corporation: *See—*
Walty, Robert J., 4,398,084, Cl. 219-528.000.

Raytheon Company: *See—*
Freedman, George; and Derby, Palmer P., 4,398,077, Cl. 219-10.55E.

Razin, Gennady I.; and Dmitriev, Stanislav P. Electron beam current stabilizing device. 4,398,132, Cl. 315-307.000.

RCA Corporation: *See—*
Chin, Danny; Henderson, John G. N.; and Maturo, Robert J., 4,398,303, Cl. 455-168.000.
Desai, Nitin V.; and Gavalchin, Emil J., 4,397,938, Cl. 430-296.000.
Dieterich, Charles B., 4,398,157, Cl. 330-86.000.
Helm, James H., 4,397,627, Cl. 425-290.000.
Hughes, Larry M., 4,398,281, Cl. 369-77.000.
Kilichowski, Kurt B., 4,397,939, Cl. 430-296.000.
Liu, Frank C.; and Kao, Yih-Sien, 4,398,210, Cl. 358-36.000.
Neilson, John M. S., 4,398,206, Cl. 357-46.000.
Stewart, Roger G., 4,398,102, Cl. 307-449.000.

Rea, Jesse R.; Kallianidis, Milton; and Kelsey, G. Stephen, to Duracell Inc. High temperature solid state storage cell. 4,397,924, Cl. 429-191.000.

Read, Glenn F. Power drive. 4,397,369, Cl. 180-205.000.

Ream, Michael D.; and Guignard, Paul C. Mobile pedestal scaffold. 4,397,373, Cl. 182-17.000.

Reckitt & Colman Products Limited: *See—*
Chapleo, Christopher B.; and Myers, Peter L., 4,397,860, Cl. 424-273.00R.

Redeker, Detmar: *See—*
Bernert, Claus-Rudiger; Kords, Christian; and Redeker, Detmar, 4,398,024, Cl. 536-85.000.

Redman, Ronald E., to Kawneer Company, Inc. Glass jacks for doors, windows, walls, etc. 4,397,124, Cl. 52-126.400.

Refregier, Jean-Louis: *See—*
Madrange, Annie; and Refregier, Jean-Louis, 4,397,836, Cl. 424-47.000.

Regie Nationale des Usines Renault: *See—*
Baudoin, Patrice, 4,397,379, Cl. 192-0.032.

Reimschuessel, Herbert K., to Allied Corporation. Polymer composition containing lithium, manganese or zirconium nucleating agent. 4,397,979, Cl. 524-413.000.

Reist, Walter, to Ferag AG. Universal link chain. 4,397,145, Cl. 59-78.000.

Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,397,857, Cl. 424-263.000.

Rempfler, Hermann: *See—*
Bohner, Beat; Rempfler, Hermann; and Schurter, Rolf, 4,397,680, Cl. 71-094.000.

Renfer, Dale S.: *See—*
Limburg, William W.; Renfer, Dale S.; and Pai, Damodar M., 4,397,931, Cl. 430-59.000.

Renishaw Electrical Limited: *See—*
McMurtry, David R., 4,397,093, Cl. 33-174.00L.

Republic Steel Corporation: *See—*
Davenport, Anthony T.; Dickinson, David W.; and DiMicco, Daniel R., 4,397,698, Cl. 148-12.00F.

Resch, Ronald D., to Resch, Ronald D. Construction-element. 4,397,902, Cl. 428-119.000.

Reseal Container Corporation of America, The: *See—*
Pardes, Greg; Berger, Richard F.; and Gerber, Bernard R., 4,397,132, Cl. 53-471.000.

Research Corporation: *See—*
Hechemy, Karim E., 4,397,959, Cl. 436-509.000.

Research Triangle Institute: *See—*
Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., 4,397,863, Cl. 424-274.000.

Resetar, Michael C., to Boeing Company, The. Adjustable litter support assembly. 4,397,432, Cl. 244-118.600.

Retallick, William B. High pressure combustor for generating steam downhole. 4,397,356, Cl. 166-303.000.

Reusser, Fritz: *See—*
Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., 4,397,950, Cl. 435-125.000.

Reynolds, Edward R. Shift lever handle structure and equipping method. 4,397,200, Cl. 74-473.00R.

Rhoades, Thomas S.: *See—*
Scott, David R.; and Rhoades, Thomas S., 4,398,184, Cl. 340-531.000.

Rhone-Poulenc Industries: *See—*
Pouchol, Jean-Marie, 4,397,969, Cl. 523-310.000.

Rhudy, John S.: *See—*
Argabright, Perry A.; and Rhudy, John S., 4,397,748, Cl. 210-733.000.

Richardson Chemical Company: *See—*
Mallory, Glenn O., Jr., 4,397,812, Cl. 420-441.000.

Richardson, James M. Karate shoe. 4,397,105, Cl. 36-106.000.

Rickard, Jimmy R., to General Electric Company. Automatic dryer control. 4,397,101, Cl. 34-30.000.

Rickenbach, David H.: *See—*
Lee, Ho C.; Rickenbach, David H.; Wolfert, Gerhard A.; and Zable, Jack L., 4,397,234, Cl. 101-93.290.

Ricoh Company, Ltd.: *See—*
Ogawa, Mutsuo, 4,398,222, Cl. 358-287.000.
Yamaguchi, Shingo, 4,398,221, Cl. 358-280.000.

Riebe, William J.: *See—*
Bramow, Scott B.; Crum, Louis J.; and Riebe, William J., 4,398,087, Cl. 235-200.0PF.

Riedel, Dieter: *See—*
Brenik, Wenzel; and Riedel, Dieter, 4,397,158, Cl. 62-380.000.

Riley, Dennis P., to Procter & Gamble Company, The. Rhodium complexes containing chiral phosphine ligands useful as hydrogenation catalysts. 4,397,787, Cl. 260-429.00R.

Rio, Arturo; Guala, Gennaro; and Biagini, Stefano, to Italcementi-Fabriche Riunite Cemento S.p.A. Device for effecting protective treatments on manufacture in concrete in operation as well as in prefabrication. 4,397,263, Cl. 118-643.000.

Risley, John F.: *See—*
Husain, Iqbal; Gundersen, Arnold; and Risley, John F., 4,397,608, Cl. 415-9.000.

Rittenbach, Otto E., to United States of America, Army. Harmonic generator. 4,398,153, Cl. 328-16.000.

Rittle, Kenneth E.: *See—*
Evans, Ben E.; and Rittle, Kenneth E., 4,397,786, Cl. 260-404.000.

Rivercross Learning Corp.: *See—*
Carlson, Albert W. D., 4,397,417, Cl. 229-92.300.

Robert, Andre; and Elliott, George A., to Upjohn Company, The. Method for preventing renal papillary necrosis with prostaglandins. 4,397,865, Cl. 424-317.000.

Robert Bosch GmbH: *See—*
Komaroff, Iwan; and Itoh, Katsucki, 4,397,283, Cl. 123-494.000.
Robitzsch, Herbert, 4,398,209, Cl. 358-27.000.
Rohde, Siegfried; Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Schramm, Herbert; and Schmidt, Gunther, 4,397,176, Cl. 73-35.000.
Romann, Peter, 4,397,179, Cl. 73-118.000.

Robert, Michel, to Societe Europeenne de Propulsion. Surface tension storage device with buffer-tank. 4,397,408, Cl. 222-394.000.

Roberto, Beverly I.: *See—*
Galal, Mostafa K.; Haines, William C.; and Roberto, Beverly I., 4,397,926, Cl. 426-582.000.

Roberts, John S.; Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, to Phillips Petroleum Company. Catalyst poisons passivated with tin compounds plus both sulfur and phosphorus. 4,397,767, Cl. 252-431.00P.

Roberts, Joseph M., Sr. Simple and rugged fishing alarm. 4,398,185, Cl. 340-573.000.

Robinson, Thomas C.; and Kitrilakis, Sotiris, to Foxcroft Associates. Hydraulically actuated cardiac prosthesis with three-way ventricular valving. 4,397,049, Cl. 3-1.700.

Robitzsch, Herbert, to Robert Bosch GmbH. Method and apparatus for digital control of a separately coded color television signal. 4,398,209, Cl. 358-27.000.

Robroy Industries: *See—*
Madej, Edward A., 4,397,437, Cl. 248-72.000.

Roche, Jean G.: *See—*
Saint-Oyant, Bernard J.; and Roche, Jean G., 4,398,261, Cl. 364-571.000.

Rodgers, Richard W.: *See—*
Hsia, Yukun; and Rodgers, Richard W., 4,398,248, Cl. 364-200.000.

Rodgers, Robert L., to Micmix Audio Products, Inc. Dynamic range expander. 4,398,158, Cl. 330-136.000.

Rogers, Charles E.: *See—*
Hodges, Robert J.; Crick, Aubrey M.; and Rogers, Charles E., 4,398,071, Cl. 200-67.0DB.

Rohde, Siegfried; Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Schramm, Herbert; and Schmidt, Gunther, to Robert Bosch GmbH. Internal combustion engine knocking sensor arrangement. 4,397,176, Cl. 73-35.000.

Rohner, Joachim; Zumfeld, Heinz; and Romic, Ivica, to W. Schlafhorst & Co. Method and device for joining textile threads by splicing with the aid of compressed air. 4,397,138, Cl. 57-22.000.

Rolls Royce Limited: *See—*
McMurtry, David R., 4,397,093, Cl. 33-174.00L.

Romann, Peter, to Robert Bosch GmbH. Device for measuring the mass of a flowing medium. 4,397,179, Cl. 73-118.000.

Rometsch, Johannes; Frey, Werner U.; and Diem, Hans, to International Standard Electric Corporation. Contactless keyboard. 4,398,180, Cl. 340-365.00L.

Romic, Ivica: *See—*
Rohner, Joachim; Zumfeld, Heinz; and Romic, Ivica, 4,397,138, Cl. 57-22.000.

Root, John A.: *See—*
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,397,511, Cl. 339-17.0CF.
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,397,513, Cl. 339-91.00R.

Rosbak, John: *See—*
Friesen, Henry; and Rosbak, John, 4,397,221, Cl. 91-420.000.

Rose, John B., to Imperial Chemical Industries PLC. Production of aromatic polyketones. 4,398,020, Cl. 528-207.000.

Rosemount Engineering Company Limited: *See—*
Johnston, James S., 4,398,194, Cl. 340-870.370.

Rosen, Klaus: *See—*
Wey, Edmund; Kathke, Gregor; Knors, Herbert; and Rosen, Klaus, 4,397,139, Cl. 57-22.000.

Rosene, Michael R., to Calgon Carbon Corporation. Glycol purification with minimal pH drop. 4,398,046, Cl. 568-679.000.

Rosenstock, Gunter: *See—*
Dietrich, Klaus; Lichti, Reiner; and Rosenstock, Gunter, 4,398,204, Cl. 346-140.000.

Rosser, Robin W.; and Keller, Leon B., to Hughes Aircraft Company. Multi-purpose air permeable composites. 4,397,907, Cl. 428-240.000.

Rotondi, Anthony J.; and Mullich, Richard O., to TRE Corporation. Door reinforcement and lock guard plate. 4,397,168, Cl. 70-417.000.

Rottenberg, Mark M.; and Davis, William O., to AAI Corporation. Rocket assisted projectile and cartridge with time delay ignition and sealing arrangement. 4,397,240, Cl. 102-376.000.

Roussel Uclaf: *See—*
Allais, Andre; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, 4,397,856, Cl. 424-251.000.

Roux, Marcel: *See—*
Barraire, Michel; Roux, Marcel; and Turolla, Jean P., 4,397,512, Cl. 339-75.00M.

Rowlee, Charles G. Fuel oil heater. 4,397,633, Cl. 431-215.000.

Rubin, Barry J.: *See—*
Davidson, Evan E.; Katopis, George A.; and Rubin, Barry J., 4,398,106, Cl. 307-549.000.

Rubinstein, Herbert J.; and Rubinstein, Morton K. Locking device for telephone instrument. 4,398,067, Cl. 179-189.00D.

Rubinstein, Morton K.: *See—*
Rubinstein, Herbert J.; and Rubinstein, Morton K., 4,398,067, Cl. 179-189.00D.

Rubner, Roland: *See—*
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,397,999, Cl. 525-426.000.
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,398,009, Cl. 525-426.000.

Ruepp, Ferdinand, to American Artos Corporation. Textile fabric dryer with rotary damper arrangement. 4,397,103, Cl. 34-155.000.

Rumage, Donald V.; and Biarnesen, Terry L. Auto mechanic's body support. 4,397,374, Cl. 182-129.000.

Rumsey, James W.: *See—*
Miles, John A.; Rumsey, James W.; and Mehlschau, James J., 4,397,473, Cl. 280-6.00H.

Runck, Alan H.; and Beatrice, G. Joseph, to Intensive Technology, Inc. Contained blood gas control. 4,397,392, Cl. 206-528.000.

Runge, Richard J.: *See—*
Thompson, Don D.; Brown, Robert J. S.; and Runge, Richard J., 4,398,273, Cl. 367-73.000.

Runkel, Richard: *See—*
Mroszczak, Edward; and Runkel, Richard, 4,397,862, Cl. 424-274.000.

Ruppen, Bruno: *See—*
Mannhart, Peter; and Ruppen, Bruno, 4,397,214, Cl. 89-1.00E.

Russ, Arild; Sjostrand, Pehr-Olof G.; Sternberg, Ingvar P.; and Lindberg, Lars G. S., to Handelsbolaget Light Regulation. Apparatus for transmitting information on an alternating current line. 4,398,178, Cl. 340-310.00A.

Russell, Thomas J., to Krytar, Inc. Center conductor element for female microwave coaxial connector. 4,397,515, Cl. 339-177.00R.

Russo, Mario A.; and Auerbach, Edward I., to Ingersoll-Rand Company. Air cushion for pneumatic impact tool. 4,397,220, Cl. 91-408.000.

Rutsche, Wendolin; and Langenegger, Urs, to Embru-Werke, Mastel & CIE. Office furniture. 4,397,244, Cl. 108-6.000.

Ryan, Joseph L.: *See—*
Long, Nicholas R.; Peisel, William E.; Ryan, Joseph L.; Stafford, John P.; and Watkins, Richard R., 4,398,190, Cl. 340-728.000.

Ryan, Matthew C.; and Soltz, Daniel J., to Fischer & Porter Company. Transducer drive circuit for ultrasonic flowmeter. 4,397,193, Cl. 73-861.280.

Ryden, William D.: *See—*
Derbenwick, Gary F.; Adams, James R.; Hanson, Matthew V.; and Ryden, William D., 4,397,077, Cl. 29-571.000.

Ryder, George: *See—*
Pinto, Albert A.; and Ryder, George, 4,397,628, Cl. 425-376.00B.

Rygiel, Sharon A., to Sherwood Medical Company. Drainage collection device with disposable liner. 4,397,643, Cl. 604-317.000.

S&C Electric Company: *See—*
Harner, R. H.; Swanson, R. T.; and Zvanut, G. J., 4,398,072, Cl. 200-146.00R.

Sabel, Herbert J. Descending accumulator for automatic case packer. 4,397,599, Cl. 414-46.000.

Safare-Crouzet: *See—*
Saint-Oyant, Bernard J.; and Roche, Jean G., 4,398,261, Cl. 364-571.000.

St. Clair, Terry L.; and Yamaki, David A., to United States of America, National Aeronautics and Space Administration. Solvent resistant, thermoplastic aromatic poly(imidesulfone) and process for preparing same. 4,398,021, Cl. 528-222.000.

St. Cyr, Raymond A., to Sperry Corporation. Bellows support for surface acoustic wave device. 4,398,117, Cl. 310-348.000.

Saint Jalmes, Herve: *See—*
Barjhoux, Yves M.; Saint Jalmes, Herve; and Taquin, Jacques R., 4,398,148, Cl. 324-307.000.
Barjhoux, Yves M.; Saint Jalmes, Herve; and Taquin, Jacques R., 4,398,150, Cl. 324-319.000.

Saint-Oyant, Bernard J.; and Roche, Jean G., to Safare-Crouzet. Device for measuring the level of a variable signal with logarithmic conversion. 4,398,261, Cl. 364-571.000.

St. Pierre, George R.: *See—*
Winkler, Louis T.; Goins, John D.; St. Pierre, George R.; Mobley, Carroll E.; and Slumaker, Craig B., 4,397,686, Cl. 75-63.000.

Saito, Kazuhisa; and Ogawa, Hiroyasu, to Toho Belson Co., Ltd. Production of carbon fibers from acrylonitrile based fibers. 4,397,831, Cl. 423-447.600.

Saito, Kenji; Takisawa, Yukihisa; and Yamachika, Hiroshi, to Sumitomo Chemical Company, Limited. Process for preparing cyclopentenolones. 4,398,043, Cl. 568-322.000.

Saito, Masato: *See*—
Tsuchihashi, Michihiro; Suzuki, Ryo; Saito, Masato; and Watanabe, Heiji, 4,398,123, Cl. 315-46.000.

Saito, Tasuku: *See*—
Kataoka, Nobuyuki; Saito, Tasuku; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,398,000, Cl. 525-437.000.

Sakakibara, Mitsuhiko: *See*—
Takeuchi, Yasumasa; Yoshimura, Yoshito; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsuji, Akira, 4,397,994, Cl. 525-332.300.

Sakakibara, Naoji: *See*—
Watanabe, Tsukasa; Amano, Hiroyuki; and Sakakibara, Naoji, 4,397,443, Cl. 251-129.000.

Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for producing rhodium compounds. 4,397,788, Cl. 260-441.000.

Sakata, Toshio; Iwao, Soichi; and Takiguchi, Shinji, to Minolta Camera Kabushiki Kaisha. Method of fixing developed electrophotographic images uses oil absorbing smoothing roller. 4,397,936, Cl 430-124.000.

Sakka, Sumio: *See*—
Mishima, Michiharu; Yamamoto, Yuji; Makita, Kensuke; Sakka, Sumio; and Kamiya, Kanichi, 4,397,666, Cl. 65-18.300.

Sakuma, Tokihiko: *See*—
Usui, Toshifumi; Kohno, Takashige; Osawa, Tadao; and Sakuma, Tokihiko, 4,397,792, Cl. 261-23.00A.

Sakurada, Nobuaki; Date, Nobuaki; Shimizu, Masami; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Device for displaying bulb photographing operation time in a photographic camera. 4,397,534, Cl. 354-23.00D.

Salisbury, Winfield W., to Energy Profiles, Inc. Charged particle machine. 4,397,809, Cl. 376-107.000.

Salisbury, Winfield W., to Energy Profiles, Inc. Compressed beam directed particle nuclear energy generator. 4,397,810, Cl. 376-107.000.

Sallon, Ronald: *See*—
Johnson, Sander K.; Murphy, Tim; Hensley, Dean; and Sallon, Ronald, 4,397,701, Cl. 156-62.000.

Salway, Peter H., to Lucas Electrical Company Limited, The. Fuel injection systems for internal combustion engines. 4,397,282, Cl. 123-487.000.

Sample, Louis J. Standpipe cap locking means. 4,397,332, Cl. 137-385.000.

Samuels, Curtis A. Reading teaching system. 4,397,635, Cl. 434-178.000.

Sanbrano, John A.: *See*—
McDaniel, Max P.; Sanbrano, John A.; and Johnson, Marvin M., 4,397,769, Cl. 252-458.000.

Sandler, Stanley R., to Pennwalt Corporation. Tetrahalophthalates as flame retardant plasticizers for halogenated resins. 4,397,977, Cl. 524-288.000.

Sando Iron Works Co., Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,397,162, Cl. 68-5.00E.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Device for measuring and controlling the pH of the atmosphere in a high pressure steamer. 4,397,162, Cl. 68-5.00E.

Sandoz, Inc.: *See*—
Nadelson, Jeffrey; and Brand, Leonard J., 4,397,850, Cl. 424-248.400.

Sandoz Ltd.: *See*—
Neumann, Peter, 4,398,028, Cl. 544-331.000.

Sangiken Ltd.: *See*—
Mihara, Osamu; and Kumada, Toyoji (said Toyoji Kumada assors. to), 4,398,295, Cl. 373-120.000.

Sanitary Scale Company: *See*—
Karp, Edward C.; and Curran, Randy J., 4,398,253, Cl. 364-466.000.

Sank, Gerald W.: *See*—
Taylor, Cecil K.; and Sank, Gerald W., 4,397,299, Cl. 126-391.000.

Sankin Industry Co., Ltd.: *See*—
Komura, Tamotsu; Tsunekawa, Masayoshi; and Yuhda, Sadayuki, 4,397,944, Cl. 435-4.000.

Sanwa Seiki Manufacturing Co., Ltd.: *See*—
Chiba, Haruo; Sekiguchi, Yukichi; and Ohkubo, Takashi, 4,397,178, Cl. 73-114.000.

Saretzky, Horst, to De Limon Fluhme GmbH & Co. Progressive-central lubrication system. 4,397,376, Cl. 184-7.00D.

Sarkar, Siddhartha, to University of California, The Regents of the. Flowcell fractionator. 4,397,954, Cl. 435-287.000.

Sarkary, Homi G.: *See*—
Nagarajan, Arunachala; and Sarkary, Homi G., 4,397,079, Cl. 29-576.00B.

Sarrine, Robert J.: *See*—
Enzer, Steven E.; and Sarrine, Robert J., 4,397,725, Cl. 204-406.000.

Sasaya, Hideaki: *See*—
Inagaki, Mitsuo; and Sasaya, Hideaki, 4,397,620, Cl. 418-141.000.

Sato, Hiroshi: *See*—
Kaneda, Hiroshi; Sato, Hiroshi; Nashimoto, Katsunori; and Matsui, Tadashi, 4,397,449, Cl. 266-106.000.

Sato, Masamichi; Hasegawa, Eiichi; and Shimanuki, Koji, to Fuji Photo Film Co., Ltd. Process of producing color solid image pickup element base plates. 4,397,928, Cl. 430-7.000.

Sato, Susumu: *See*—
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,397,678, Cl. 71-72.000.

Satoh, Tatsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit for detecting the operational state of a television receiver. 4,398,220, Cl. 358-188.000.

Sauers, Richard F., to Du Pont de Nemours, E. I., and Company. Herbicidal o-sulfamylmethylbenzenesulfonamides. 4,397,679, Cl. 71-92.000.

Savage, John M., Jr. Lens cap holder for attachment to circuit boards. 4,398,240, Cl. 362-311.000.

Sayers, Eugene H.: *See*—
Lutz, Phillip A.; Motz, Phillip R.; and Sayers, Eugene H., 4,398,235, Cl. 361-393.000.

Scallet, Barrett L.: *See*—
Stubits, Marcella C.; Teng, James; and Scallet, Barrett L., 4,397,872, Cl. 426-16.000.

Schafer, Richard A.: *See*—
Price, David S.; Schafer, Richard A.; and Kittle, Carl E., 4,397,359, Cl. 172-430.000.

Schatz, Friedrich: *See*—
Gerth, Dieter; Schatz, Friedrich; and van Hove, Cornelius, 4,398,058, Cl. 174-106.00D.

Schelinski, Siegfried; Patzig, Dieter; Heinrich, Klaus; and Gruger, Bernd, to VEB Wissenschaftlich-Technischer Betrieb Wirtschaftsglas Bad Muskau. Process and devices for hardening of glassware by ion exchange. 4,397,668, Cl. 65-30.140.

Schell, Frank M.; DiMonico, George S.; and Bania, Joseph, to Indian Head, Inc. Automatic transfer switch. 4,398,097, Cl. 307-64.000.

Schelling & Co., Firma: *See*—
Ess, Wilfried; and Kollmann, Horst, 4,397,598, Cl. 414-28.000.

Schering Aktiengesellschaft: *See*—
Drawert, Manfred; and Imoehl, Wolfgang, 4,397,991, Cl. 525-167.000.

Schlumberger Technology Corporation: *See*—
Hulin, Jean-Pierre, 4,397,190, Cl. 73-861.040.
Sibert, Elbert E., 4,398,272, Cl. 367-33.000.

Schmid, Eckhardt: *See*—
Busch, Gerhard; Jakob, Heinz; Jendrzejewski, Reiner; Klement, Heribert; Prohaska, Hans; Schmid, Eckhardt; and Schneider, Theodor, 4,398,135, Cl. 318-443.000.

Schmidt, Gunther: *See*—
Rohde, Siegfried; Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Schramm, Herbert; and Schmidt, Gunther, 4,397,176, Cl. 73-35.000.

Schmidt, Jerry W., to Atlantic Richfield Company. Method for forming drain holes from a cased well. 4,397,360, Cl. 175-61.000.

Schmidt, Mogens F., to Falck Schmidt Shipping ApS. Supporting leg for mobile constructions. 4,397,479, Cl. 280-764.100.

Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. 3-[(Substituted-amino)(aryl)methyl]-1H-indoles. 4,398,030, Cl. 548-506.000.

Schmidt, Rainer: *See*—
Kammerling, Bruno; Meier, Franz; and Schmidt, Rainer, 4,397,450, Cl. 266-193.000.

Schmitt, Hans J.: *See*—
Killat, Ulrich; Rabe, Gert; and Schmitt, Hans J., 4,397,930, Cl. 430-50.000.

Schneider, Ernst: *See*—
Franz, Arnold; Schneider, Ernst; and Jakobshagen, Gregor, 4,397,882, Cl. 427-391.000.

Schneider, Fred J.: *See*—
Booth, Raymond H.; Monahan, Jack J.; and Schneider, Fred J., 4,397,385, Cl. 198-345.000.

Schneider, Michael: *See*—
Hofstadt, Carl-Ernst; Schneider, Michael; and Kochloefl, Karel, 4,398,050, Cl. 585-640.000.

Schneider, Robert L. Method for restraining transverse movement of the lower edges of vertically hung sliding doors. 4,397,063, Cl. 16-90.000.

Schneider, Theodor: *See*—
Busch, Gerhard; Jakob, Heinz; Jendrzejewski, Reiner; Klement, Heribert; Prohaska, Hans; Schmid, Eckhardt; and Schneider, Theodor, 4,398,135, Cl. 318-443.000.

Schoch, Daniel A.: *See*—
Schockman, Robert L.; Busse, Vernon E.; Wissman, Terry L.; and Schoch, Daniel A., 4,397,232, Cl. 100-214.000.

Schockman, Robert L.; Busse, Vernon E.; Wissman, Terry L.; and Schoch, Daniel A., to Minster Machine Company, The. Mechanical press having a drop in drive assembly. 4,397,232, Cl. 100-214.000.

Schockmel, R., to Arbed S.A. Energy storage element and method of making same. 4,397,962, Cl. 501-112.000.

Schoepf, Victor L., to Mobil Oil Corporation. Door interlock system for radioactive testing. 4,398,191, Cl. 340-825.320.

Schoeppel, Roger J.: *See*—
Terry, Lynn E.; and Schoeppel, Roger J., 4,397,153, Cl. 60-649.000.

Schonwetter, Sarah; and Schonwetter, Steven B. Liner for fire helmet or the like. 4,397,045, Cl. 2-5.000.

Schonwetter, Steven B.: *See*—
Schonwetter, Sarah; and Schonwetter, Steven B., 4,397,045, Cl. 2-5.000.

Schoute, Frederik C., to U.S. Philips Corporation. Method for the transmission of data packets. 4,398,289, Cl. 370-93.000.

Schram, Daniel R. Method and means for applying chemicals to a field. 4,397,421, Cl. 239-177.000.

Schramm, Herbert: *See—*
Rohde, Siegfried; Bonitz, Jorg; Estenmann, Robert; Knab, Rochus; Schramm, Herbert; and Schmidt, Gunther, 4,397,176, Cl. 73-35.000.

Schreurs, Gerardus C. M.: *See—*
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,397,990, Cl. 525-167.000.

Schuco Heinz Schurmann GmbH & Co.: *See—*
Habicht, Siegfried; and Gerss, Heinz, 4,397,116, Cl. 49-501.000.

Schueler, Marlin A., to Swingline Inc. Burster. 4,397,410, Cl. 225-98.000.

Schuhmacher, Ernst, to Deere & Company. Cleaning device for harvesting machines. 4,397,319, Cl. 130-27.0HF.

Schuler, Alan N.: *See—*
Chiklis, Charles K.; and Schuler, Alan N., 4,397,996, Cl. 525-380.000.

Schulke, Karl A., to Heraeus Quarzschmelze GmbH. Bell of translucent fused silica for the precipitation of polysilicon. 4,397,897, Cl. 428-35.000.

Schurter, Rolf: *See—*
Bohner, Beat; Rempfler, Hermann; and Schurter, Rolf, 4,397,680, Cl. 71-094.000.

Schutten, Herman P.: *See—*
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,398,205, Cl. 357-38.000.

Schwartz, Werner; and Fischer, Peter, to Metallgesellschaft Aktiengesellschaft. Continuous process of smelting metallic lead directly from lead- and sulfur-containing materials. 4,397,688, Cl. 75-77.000.

Schwarz, Gunther: *See—*
Kraus, Gerhard; and Schwarz, Gunther, 4,397,507, Cl. 308-217.000.

Schwarzbach, Frank A.: *See—*
Kolbe, Hartmut F.; and Schwarzbach, Frank A., 4,397,543, Cl. 355-40.000.

Schweitzer Industrial Corporation: *See—*
Bloomer, Ivan, 4,397,662, Cl. 55-228.000.

Schwenzer, Alfred F., to NJM, Inc. Labeling machine. 4,397,709, Cl. 156-351.000.

Schwert, Joseph A., to A. O. Smith Harvestore Products, Inc. Cathodically protected vessel. 4,397,726, Cl. 204-197.000.

Sciaky Intertechnique S.A.: *See—*
Dard, Philippe; and Cazes, Roland, 4,398,079, Cl. 219-121.0EC.

Science Union et Cie: *See—*
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,397,857, Cl. 424-263.000.

Sckerl, Herbert A.: *See—*
Ebrey, Roger G. A.; and Sckerl, Herbert A., 4,397,084, Cl. 29-749.000.

Scott, David R.; and Rhoades, Thomas S., to Scott Science & Technology, Inc. Intrusion alarm system for buildings utilizing the building structure as a communications path for alarm signals or for security system activation signals. 4,398,184, Cl. 340-531.000.

Scott, Melvin: *See—*
Brierley, John M.; and Scott, Melvin, 4,397,755, Cl. 252-113.000.

Scott Science & Technology, Inc.: *See—*
Scott, David R.; and Rhoades, Thomas S., 4,398,184, Cl. 340-531.000.

Scott, Steven W.; and Vaughn, Howard A., Jr., to General Electric Company. Composition comprising an aromatic polycarbonate and a siloxy-oxyalkylene block copolymer. 4,397,973, Cl. 524-114.000.

Scull, Charles O.: *See—*
Work, Beverly M.; Work, Frederick T., Jr.; and Scull, Charles O., 4,397,499, Cl. 296-218.000.

Seabrook Blanching Corporation: *See—*
Thornton, Robert L., 4,397,228, Cl. 99-541.000.

Sebag, Henri, to L'Oreal. Polyethylene glycol derivatives, their use and cosmetic and pharmaceutical compositions containing them. 4,398,045, Cl. 568-624.000.

Secoh Giken, Inc.: *See—*
Bahn, Itsuki; and Miyata, Tadao, 4,398,127, Cl. 315-151.000.

Seebach, Henry F., Jr., to Eyelematic Manufacturing Company. Double feed eyelet machine with roll forming capability. 4,397,170, Cl. 72-68.000.

Seecamp, Lueder. Self-telescoping cartridge magazine spring. 4,397,453, Cl. 267-180.000.

Seelen-Kruijssen, Josepha M. E.: *See—*
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,397,990, Cl. 525-167.000.

Segawa, Keiji; Matsuda, Norio; and Murakami, Masaki, to Victor Company of Japan, Limited. Capacitance detection type stylus for grooveless disc records and method for making same. 4,398,282, Cl. 369-126.000.

Seidel, Hans: *See—*
von Hoerschelmann, Detlef; Seidel, Hans; Berger, Gerhard; Masuth, Armin; Beaucamp, Klaus; and Gruber, Wolfgang, 4,397,952, Cl. 435-190.000.

Seim, Roy H.; and Bagby, John F., to Eastman Kodak Company. Quadruplex recordings with ferrite heads resembling quadruplex recordings with metal heads. 4,398,226, Cl. 360-65.000.

Sekiguchi, Yukichi: *See—*
Chiba, Haruo; Sekiguchi, Yukichi; and Ohkubo, Takashi, 4,397,178, Cl. 73-114.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,397,976, Cl. 524-178.000.
Nakagawa, Yoshihiro; and Yuura, Hachirou, 4,397,906, Cl. 428-195.000.

Selep, Andrew; and Bhide, Yeshwant K., to Allis-Chalmers Corporation. Gas lock system charging particles into a pressurized gasification reactor. 4,397,657, Cl. 48-86.00R.

Sepehri, Majid: *See—*
Gott, Geoffrey F.; Doany, Paul; and Sepehri, Majid, 4,398,296, Cl. 375-1.000.

Sergio, Carbonini; and Pelosi, Giancarlo, to Consiglio Nazionale Delle Ricerche. Heart pump for the circulation of blood outside the body of a living subject. 4,397,617, Cl. 417-475.000.

Serlin, Irving, to Monsanto Company. Electrographic recording material. 4,397,883, Cl. 427-14.100.

Serry, Frank; and O'Connor, Edward P., to VCS, Inc. Shipping container for a closed circuit television system. 4,398,212, Cl. 358-93.000.

Setoguchi, Michihide: *See—*
Kawakita, Takeshi; Muro, Tomio; and Setoguchi, Michihide, 4,397,853, Cl. 424-250.000.

Seyferth, Dietmar; Prud'Homme, Christian C.; and Wiseman, Gary H., to Massachusetts Institute of Technology. Stable liquid polymeric precursor to silicon nitride and process. 4,397,828, Cl. 423-344.000.

Seyler, Jay K.: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,397,780, Cl. 260-112.50T.

Shaffer, Howard R., to AMP Incorporated. Repairable connector. 4,397,517, Cl. 339-217.00S.

Shaffer, Mary E.: *See—*
Benjamin, Mary Lou; Dobbs, Robert J.; and Shaffer, Mary E., 4,397,889, Cl. 427-221.000.

Shaffer, Robert: *See—*
Flinchbaugh, David E.; Hill, Raymond R.; Shaffer, Robert; and Wagner, Thomas R., 4,398,110, Cl. 310-83.000.

Shankland, Timothy A., to Western Electric Company, Inc. Methods of testing multifrequency dialing signals. 4,398,147, Cl. 324-78.00R.

Shankle, Derrill F.; and Maitlen, Jeffrey L., to Westinghouse Electric Corp. Arc protection arrangement for covered overhead power distribution lines. 4,398,057, Cl. 174-2.000.

Shannon, Mark L., to Conoco Inc. Polymer-supported ethylene polymerization catalyst. 4,397,764, Cl. 252-429.00B.

Sharpe, James L., to United States of America, Army. Penetration sensing system with radiation-emitting material. 4,398,089, Cl. 250-336.100.

Shea, Roger J.: *See—*
Davies, Gerald B.; and Shea, Roger J., 4,397,137, Cl. 57-22.000.

Shear, William F., to Gleason Works, The. Apparatus for controlling the movement of a reciprocatory hydraulically driven element. 4,397,175, Cl. 72-453.020.

Sheehan, Richard W.; and Burnett, Willys D., to Sherwood Research Corporation. Method and apparatus for splicing yarns and tow. 4,397,140, Cl. 57-22.000.

Sheldahl, Inc.: *See—*
Petersen, Stephen K., 4,397,082, Cl. 29-622.000.

Shell Oil Company: *See—*
De La Mare, Harold E.; and Brownscombe, Thomas F., 4,397,998, Cl. 525-420.500.
Eilers, Jacobus; and Stork, Willem H. J., 4,397,733, Cl. 208-96.000.
Eilers, Jacobus; and Stork, Willem H. J., 4,397,734, Cl. 208-96.000.
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,397,990, Cl. 525-167.000.
Kramer, Petrus A., 4,398,032, Cl. 549-302.000.
Van der Pas-Toornstra, Hilde M., 4,397,660, Cl. 55-48.000.
Vinegar, Harold J.; and Waxman, Monroe H., 4,398,151, Cl. 324-323.000.

Shelledy, Carey W.: *See—*
Winegard, John R.; and Shelledy, Carey W., 4,398,201, Cl. 343-815.000.

Shembel, Elena M.: *See—*
Xenzhek, Oktavian S.; Shembel, Elena M.; Litvinova, Valentina I.; Martynenko, Tamara L.; Raikhelson, Leonid B.; Sokolov, Leonid A.; and Moskovsky, Valentin Z., 4,397,921, Cl. 429-105.000.

Sheng, Ping, to Exxon Research and Engineering Co. Solar cell with reflecting grating substrate. 4,398,056, Cl. 136-259.000.

Sherman, Anthony M., to Mobil Oil Corporation. Blends of p-methylstyrene polymer and diene-styrene or diene-(p-methylstyrene) block copolymers. 4,397,988, Cl. 525-98.000.

Sherwood Medical Company: *See—*
Rygiel, Sharon A., 4,397,643, Cl. 604-317.000.

Sherwood Research Corporation: *See—*
Sheehan, Richard W.; and Burnett, Willys D., 4,397,140, Cl. 57-22.000.

Shibata, Takanori: *See—*
Takahashi, Junichi; Shibata, Takanori; Naito, Shotaro; and Tokuyama, Keiichi, 4,398,260, Cl. 364-565.000.

Shih, David H.: *See—*
Christensen, Burton G.; Hannah, John; Leanza, William J.; and Shih, David H., 4,397,861, Cl. 424-274.000.

Shimanuki, Koji: *See—*
Sato, Masamichi; Hasegawa, Eiichi; and Shimanuki, Koji, 4,397,928, Cl. 430-7.000.

Shimizu, Masami: *See*—
Sakurada, Nobuaki; Date, Nobuaki; Shimizu, Masami; and Aizawa, Hiroshi, 4,397,534, Cl. 354-23.00D.

Shimoyama, Soichi: *See*—
Homma, Minoru; Okoshi, Noboru; Kudo, Kin-ichi; Shimoyama, Soichi; and Tashiro, Nansei, 4,398,016, Cl. 528-158.500.

Shin-Etsu Chemical Co., Ltd.: *See*—
Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, 4,397,835, Cl. 424-35.000.

Shinohara, Kazuyoshi: *See*—
Asada, Takafumi; and Shinohara, Kazuyoshi, 4,397,510, Cl. 339-17.0CF.

Shiokawa, Youichi: *See*—
Teraji, Tsutomu; Oku, Teruo; and Shiokawa, Youichi, 4,397,849, Cl. 424-246.000.

Shionogi & Co., Ltd.: *See*—
Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, 4,397,835, Cl. 424-35.000.

Shipp, Earl H., to Eckel Industries, Inc. Door with removable sheet. 4,397,117, Cl. 49-501.000.

Shippey, Michael A., to Chevron Research Company. Oil-soluble metal thiolate-succinimide complexes. 4,397,749, Cl. 252-42.700.

Shirasu, Shinichi, to Citizen Watch Company Limited. Digital-analog converter circuit for speech-synthesizing electronic timepiece. 4,397,562, Cl. 368-63.000.

Shitamatsu, Ryujiro: *See*—
Tanaka, Yoshiro; Moroi, Hayato; Kamatsu, Yukihiko; Akagi, Kazuo; Shitamatsu, Ryujiro; and Nishimura, Tadashi, 4,397,328, Cl. 134-76.000.

Shudo, Koichi: *See*—
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,397,678, Cl. 71-72.000.

Shumaker, Craig B.: *See*—
Winkler, Louis T.; Goins, John D.; St. Pierre, George R.; Mobley, Carroll E.; and Shumaker, Craig B., 4,397,686, Cl. 75-63.000.

Shur-Lok Corporation: *See*—
Phelan, Charles S.; and Fort, Jacob R., 4,397,186, Cl. 73-584.000.

Sibert, Elbert E., to Schlumberger Technology Corporation. Computerized truck instrumentation system. 4,398,272, Cl. 367-33.000.

Siemens Aktiengesellschaft: *See*—
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,397,999, Cl. 525-426.000.
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,398,009, Cl. 525-426.000.
Arlt, Manfred; and Dathe, Joachim, 4,397,695, Cl. 148-1.500.
Dietrich, Klaus; Lichti, Reiner; and Rosenstock, Gunter, 4,398,204, Cl. 346-140.000.
Grassl, Hans-Peter, 4,397,547, Cl. 356-1.000.
Haendle, Joerg; Maass, Wolfgang; and Wolf, Hans-Dieter, 4,398,213, Cl. 358-111.000.
Heidemann, Luder, 4,398,144, Cl. 324-51.000.
Lutz, Karl A.; and Knorpp, Eberhard, 4,398,285, Cl. 370-58.000.
Pfeiler, Manfred, 4,398,302, Cl. 378-146.000.
Wagner, Karl, 4,398,065, Cl. 179-18.0FG.

Siemens Corporation: *See*—
Sinberg, Howard, 4,398,066, Cl. 179-70.000.

Siemens Gammasonics, Inc.: *See*—
Lewis, George K., 4,398,116, Cl. 310-334.000.

Signetics Corporation: *See*—
Keller, Philip J., 4,398,105, Cl. 307-518.000.

Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-tetrazolyl-19-hydroxy-PG compounds. 4,398,025, Cl. 542-429.000.

Silberberg, Jeffrey L., to United States of America, Health & Human Services. Instrument for measurement of exposure from a laser radiation. 4,397,552, Cl. 356-215.000.

Silverberg, Morton; Browne, John M.; and Young, Dale W., to Xerox Corporation. Apparatus for detecting the flotation level in an air supported sheet separating and feeding device. 4,397,459, Cl. 271-94.000.

Sinberg, Howard, to Siemens Corporation. Automatic power denial circuit for a subscriber line interface circuit. 4,398,066, Cl. 179-70.000.

Singer Company, The: *See*—
Baker, Elwood B.; and Turner, James A., 4,398,241, Cl. 364-167.000.
Harbeck, Martin E., 4,397,057, Cl. 15-321.000.
Zylbert, Thaddeus J.; and Hurler, Herbert T., 4,397,250, Cl. 112-184.000.

Sircar, Ila, to Warner-Lambert Company. [3,6-Pyridazinediylbis(thio)]-bis-[2,2-dimethylalkanoic acids] and derivatives as anti-arteriosclerotic agents and method. 4,397,852, Cl. 424-250.000.

Sircar, Ila, to Warner-Lambert Company. Substituted 6-phenyl-3(2H)-pyridazinones useful as cardiotonic agents. 4,397,854, Cl. 424-250.000.

Sircar, Ila, to Warner-Lambert Company. 4-(Substituted)-α, α-dimethyl-1-piperazine pentanoic acids and derivatives as anti-arteriosclerotic agents and method. 4,397,855, Cl. 424-250.000.

Sitzema, Ronald L., Jr.: *See*—
de Vos, Hendrik A. J.; and Sitzema, Ronald L., Jr., 4,398,239, Cl. 362-263.000.

Sjostrand, Pehr-Olof G.: *See*—
Russ, Arild; Sjostrand, Pehr-Olof G.; Sternberg, Ingvar P.; and Lindberg, Lars G. S., 4,398,178, Cl. 340-310.00A.

Skaife, Margaret R., Trustee: *See*—
Skaife, William A., 4,397,114, Cl. 47-81.000.

Skaife, William A., to Skaife, Margaret R., Trustee. Soiless growing system. 4,397,114, Cl. 47-81.000.

SKF Kugellagerfabriken GmbH: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,397,802, Cl. 264-219.000.

Skiles, Jean A.: *See*—
Lewis, Norris E.; and Skiles, Jean A., 4,398,113, Cl. 310-232.000.

Skoupi, Dieter; and Weber, Gerd, to Bayer Aktiengesellschaft. Apparatus for the production of a solid-forming or foam-forming mixture composed of at least two flowable reaction components and fillers. 4,397,407, Cl. 222-132.000.

Slattery, Ian, to Spencer Wright Industries, Inc. Tufting machine hook for forming low pile fabric. 4,397,249, Cl. 112-79.00R.

Sloviter, Henry A., to University of Pennsylvania, The. Process for prolonging retention of emulsion particles in the bloodstream. 4,397,870, Cl. 424-325.000.

Smirnov, Boris A.: *See*—
Kanshin, Nikolai N.; Fedotov, Vladimir M.; Smirnov, Boris A.; and Guskov, Igor A., 4,397,311, Cl. 128-305.000.

Smith, Derrick A. Solar furnace. 4,397,152, Cl. 60-641.150.

Smith Engineering: *See*—
Smith, Jay, III, 4,398,086, Cl. 235-145.00R.

Smith, Jay, III, to Smith Engineering. Game-calculator having sliding mask. 4,398,086, Cl. 235-145.00R.

Smith, John W., to Emhart Industries, Inc. Switching mechanism. 4,398,168, Cl. 337-58.000.

Smith, Jon D.; and Parker, Glenn T., to Dry Dock Industries, Inc. Anchoring retainer for threaded fasteners. 4,397,595, Cl. 411-15.000.

Smith, Kendall, II: *See*—
Beaver, Jeffrey L.; Kennedy, Robert J., Jr.; Smith, Kendall, II; and Brown, Gregory N., 4,397,423, Cl. 239-684.000.

Smith, Maurice R.: *See*—
Moore, Sanders H.; and Smith, Maurice R., 4,397,720, Cl. 204-98.000.

Smith, Paul F., to Storage Technology Corporation. Tape drive having improved reel hub. 4,397,428, Cl. 242-201.000.

Smith, Raymond P., Jr. Fuel consumption signalling system. 4,398,174, Cl. 340-53.000.

Smith, Richard H., to Healy Tibbitts Construction Co. Surf service vehicle. 4,397,370, Cl. 180-210.000.

Smith, Rosemary L.: *See*—
Janata, Jiri; Huber, Robert J.; and Smith, Rosemary L., 4,397,714, Cl. 204-1.00T.

SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Kirstein, Hartmut, 4,397,205, Cl. 83-364.000.

Snitzer, Elias; and Bacon, James F., to United Technologies Corporation. Composite bonding. 4,397,961, Cl. 501-15.000.

SOCAPEX: *See*—
Barraire, Michel; Roux, Marcel; and Turolla, Jean P., 4,397,512, Cl. 339-75.00M.

S.A. Des Etablissements Staubli: *See*—
Burquier, Jean-Luc, 4,397,445, Cl. 251-149.900.

Societe Anonyme dite Compagnie Industrielle Des Telecommunications Cit-Alcatel: *See*—
Normand, Gerard, 4,397,539, Cl. 355-3.0DD.

Societe Anonyme Dite: L'OREAL: *See*—
Madrange, Annie; and Refregier, Jean-Louis, 4,397,836, Cl. 424-47.000.

Societe d'Ingenierie des Transports: *See*—
Noyon, Gustave, 4,397,601, Cl. 414-345.000.

Societe d'Optique, Precision Electronique et Mecanique: *See*—
Baluteau, Jean-Michel, 4,397,530, Cl. 350-541.000.

Societe Europeenne de Propulsion: *See*—
Heidmann, Richard; and Crapiz, Dino, 4,397,430, Cl. 244-3.160.
Robert, Michel, 4,397,408, Cl. 222-394.000.

Sokolov, Leonid A.: *See*—
Xenzhek, Oktavian S.; Shembel, Elena M.; Litvinova, Valentina I.; Martynenko, Tamara L.; Raikhelson, Leonid B.; Sokolov, Leonid A.; and Moskovsky, Valentin Z., 4,397,921, Cl. 429-105.000.

Solaroi, Inc.: *See*—
Keefe, Richard A., 4,397,305, Cl. 126-448.000.

Soletanche: *See*—
Darrousin, Michel; and Marchand, Daniel, 4,397,589, Cl. 405-260.000.

Solex Research Corporation: *See*—
Watanabe, Morio; Nishimura, Sanji; and Watanabe, Nobuatsu, 4,397,682, Cl. 75-0.50A.

Solomon, Howard M.: *See*—
Oftedahl, Marvin L.; Solomon, Howard M.; and Webster, James A., 4,397,995, Cl. 525-374.000.

Soltz, Daniel J., to Fischer & Porter Company. Ultrasonic flowmeter including means to measure pipe geometry. 4,397,194, Cl. 73-861.280.

Soltz, Daniel J.: *See*—
Ryan, Matthew C.; and Soltz, Daniel J., 4,397,193, Cl. 73-861.280.

Sony Corporation: *See*—
Doi, Toshitada; and Odaka, Kentarou, 4,398,292, Cl. 371-39.000.
Kaneko, Shinji, 4,398,179, Cl. 340-347.0AD.
Kuniyoshi, Yasunobu; and Okada, Takashi, 4,398,193, Cl. 340-825.760.
Suzuki, Kiyoshi, 4,398,278, Cl. 369-33.000.
Watanabe, Nobuhiko, 4,398,224, Cl. 358-339.000.
Yasuda, Nobuyuki, 4,398,219, Cl. 358-167.000.

Souriau & Cie.: *See*—
Joannais, Georges, 4,398,230, Cl. 361-1.000.

Spazierer, Hubert: *See*—
Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, 4,398,073, Cl. 200-295.000.

Spector, George: *See*—
Berry, James B.; and Spector, George, 4,397,323, Cl. 132-11.00R.
Davis, Clifford E. S.; and Spector, George, 4,397,050, Cl. 4-601.000.
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., to Eaton Corporation. Gate turn-off device with high turn-off gain. 4,398,205, Cl. 357-38.000.
Spencer, Douglas A., to Bell Telephone Laboratories, Incorporated. Digital switching over PAM bus system. 4,398,287, Cl. 370-85.000.
Spencer Wright Industries, Inc.: *See*—
Slattery, Ian, 4,397,249, Cl. 112-79.00R.
Sperry Corporation: *See*—
Hedin, Raymond C.; and Amundson, Dennis L., 4,398,269, Cl. 365-195.000.
Lausch, H. Nevin; and Priepke, Edward H., 4,397,134, Cl. 56-98.000.
Lee, Patrick S., 4,398,154, Cl. 328-58.000.
St. Cyr, Raymond A., 4,398,117, Cl. 310-348.000.
Spokane Crusher Mfg. Co.: *See*—
Warren, Donald R.; and Warren, Kenneth D., 4,397,426, Cl. 241-275.000.
Sprague Electric Company: *See*—
Neirman, Stephen M.; and Burn, Ian, 4,397,886, Cl. 427-80.000.
Spring, Donald K., to Allis-Chalmers Corporation. Cushion stop for hydraulic cylinder. 4,397,218, Cl. 91-26.000.
Springer, Hartmut, to Hoechst Aktiengesellschaft. Water-soluble phthalocyanine sulfonyl cyanamide compounds, process for their manufacture and their use as dyestuffs. 4,397,649, Cl. 8-436.000.
Sron, Harry F.: *See*—
Campisi, Carl; and Sron, Harry F., 4,398,236, Cl. 361-419.000.
Staar S. A.: *See*—
d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., 4,398,300, Cl. 377-18.000.
Staat, Karlhans, to Kocks Technik GmbH & Company. Rolling mill. 4,397,169, Cl. 72-10.000.
Stacey, Eric J.: *See*—
Brennen, Michael B.; Gyugyi, Laszlo; and Stacey, Eric J., 4,398,141, Cl. 323-211.000.
Stach, Leonard J., to Velsicol Chemical Corporation. Dioxolane substituted 2,6-dinitroanilines. 4,397,677, Cl. 71-88.000.
Stafford, John P.: *See*—
Long, Nicholas R.; Peisel, William E.; Ryan, Joseph L.; Stafford, John P.; and Watkins, Richard R., 4,398,190, Cl. 340-728.000.
Stahlwerke Peine-Salzgitter AG: *See*—
Freier, Klaus; Vlad, Constantin M.; and Hulka, Klaus, 4,397,697, Cl. 148-12.00F.
Stalhut, B. R. Jewelry tag marking method. 4,397,208, Cl. 83-880.000.
Stamicarbon, B.V.: *See*—
Peters, Peter J. H.; and Kerkhoofs, Pieter L., 4,397,949, Cl. 435-99.000.
Stana, Regis R.; and Lopez, Jose G., to Wyoming Mineral Corporation. Method to maintain a high Fe^{+2}/Fe^{+3} ratio in the stripping system for the recovery of uranium from wet process phosphoric acid. 4,397,820, Cl. 423-8.000.
Stanadyne, Inc.: *See*—
Gardner, William J., 4,397,271, Cl. 123-90.550.
Standard Oil Company: *See*—
Ballard, Geoffrey E. H., 4,397,919, Cl. 429-53.000.
Grasselli, Robert K.; and Suresh, Dev D., 4,397,771, Cl. 252-467.000.
Pesa, Frederick A.; Graham, Anne M.; and Kliewer, Wayne R., 4,398,039, Cl. 560-265.000.
Stanek, Jaroslav: *See*—
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,397,844, Cl. 424-177.000.
Stark, Bernard P.: *See*—
Green, George E.; Irving, Edward; and Stark, Bernard P., 4,398,014, Cl. 528-89.000.
Statz, Ralph M. Sewer back up warning system. 4,398,186, Cl. 340-616.000.
Steiner, Michel, to Lacoray S.A. Protecting device especially for motor-cyclists. 4,397,046, Cl. 2-44.000.
Stenger, Karl: *See*—
Porrmann, Herbert; Heidel, Peter; and Stenger, Karl, 4,397,337, Cl. 138-118.100.
Stenzel, Adalbert, to Bitzer-Kuhlmaschinenbau GmbH & Co. KG. Rolling piston compressor with locking device for the separating slide. 4,397,618, Cl. 418-23.000.
Sterling Drug Inc.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,398,030, Cl. 548-506.000.
Sternberg, Ingvar P.: *See*—
Russ, Arild; Sjostrand, Pehr-Olof G.; Sternberg, Ingvar P.; and Lindberg, Lars G. S., 4,398,178, Cl. 340-310.00A.
Stevens, Robert A.: *See*—
Matthews, Billie J.; Allison, John P.; Woon, Paul S.; Stevens, Robert A.; and Bornslaeger, Stephan R., 4,397,644, Cl. 604-378.000.
Stevens, Stephen, to PPG Industries, Inc. Composite conveying roll. 4,397,673, Cl. 65-374.110.
Stewart, Robert D.: *See*—
Gamble, Robert L.; and Stewart, Robert D., 4,397,102, Cl. 34-57.00A.
Stewart, Roger G., to RCA Corporation. Gated parallel decoder. 4,398,102, Cl. 307-449.000.
Stichel, Willi: *See*—
Sauer, Heinz; and Stichel, Willi, 4,397,066, Cl. 24-20.00R.
Stillman, Gerald I.; and Wiley, Rudolf A. Confined vortex cooling tower. 4,397,793, Cl. 261-30.000.
Stockton, William W.; and Hutto, Walter D., Jr., to General Electric Company. Control system for an augmented turbofan engine. 4,397,148, Cl. 60-223.000.
Stoller, Patricia S.: *See*—
Hammonds, James C.; Stoller, Patricia S.; and VanDyke, Ronald D., 4,397,594, Cl. 410-59.000.
Stoltman, Donald D.: *See*—
Haka, Raymond J.; and Stoltman, Donald D., 4,397,289, Cl. 123-571.000.
Stolz, Theodore O.; Moore, Richard A.; and Lutz, James P., to BASF Wyandotte Corporation. Alkylene oxide adducts of vicinal toluenediamine. 4,397,966, Cl. 521-167.000.
Storage Technology Corporation: *See*—
Anderson, Robert, 4,398,227, Cl. 360-71.000.
Smith, Paul F., 4,397,428, Cl. 242-201.000.
Stork, Willem H. J.: *See*—
Eilers, Jacobus; and Stork, Willem H. J., 4,397,733, Cl. 208-96.000.
Eilers, Jacobus; and Stork, Willem H. J., 4,397,734, Cl. 208-96.000.
Story, Julian R.; and Myers, E. Gary, to Armour-Dial, Inc. Rapid saponification process. 4,397,760, Cl. 252-370.000.
Storz, Siegbert: *See*—
Haug, Erich; and Storz, Siegbert, 4,397,640, Cl. 604-33.000.
Stott, Paul E., to Uniroyal, Inc. Expandable and curable polyester resin composition and method for making same. 4,397,965, Cl. 521-128.000.
Strasser, Robert A.; and Goch, Stephen W., to Ford Motor Company. Method of making container for gas generating propellant. 4,397,596, Cl. 413-6.000.
Stribling, John L., to Ford Motor Company. Chamber for tesing acoustical transmission loss characteristics of sheet materials. 4,397,187, Cl. 73-589.000.
Strobush, Victor H., to Honeywell Inc. Delay function module for ammunition. 4,397,239, Cl. 102-275.000.
Strom, Robert M., to Dow Chemical Company, The. Preparation of 3,3'5,5'-tetratertiary butyl diphenoquinone. 4,397,785, Cl. 260-396.00N.
Strong, William A.; and Church, Kenneth, to Strong, William A. Slurry production system. 4,397,561, Cl. 366-21.000.
Stroud, Vernon, to Westinghouse Electric Corp. System for controlling the temperature of the upper end of a missile. 4,397,215, Cl. 89-1.816.
Struss, Ortwin: *See*—
Herwig, Thomas; and Struss, Ortwin, 4,397,557, Cl. 356-342.000.
Stubits, Marcella C.; Teng, James; and Scallet, Barrett L., to Anheuser-Busch, Incorporated. High gravity brewing using low gel point rice adjuncts. 4,397,872, Cl. 426-16.000.
Stuetz, Dagobert E., to Celanese Corporation. Smoking preparations. 4,397,321, Cl. 131-334.000.
Stultz, Richard A., to Armco Inc. Heat exchanger for concentrating solar collectors and method for making the heat exchanger. 4,397,303, Cl. 126-442.000.
Sublett, Bobby J., to Eastman Kodak Company. Extrusion blow moldable copolyesters. 4,398,022, Cl. 528-302.000.
Sud Chemie, A.G.: *See*—
Hofstadt, Carl-Ernst; Schneider, Michael; and Kochloefl, Karel, 4,398,050, Cl. 585-640.000.
Sugata, Masao; Fukaya, Masaki; Nakagiri, Takashi; Yamagata, Takaaki; and Hirai, Yutaka, to Canon Kabushiki Kaisha. Hydrogenated amorphous silicon photoconductive layer. 4,397,933, Cl. 430-84.000.
Sugita, Ariyasu: *See*—
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,397,976, Cl. 524-178.000.
Sugita, Yutaka: *See*—
Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,397,912, Cl. 428-336.000.
Sugiura, Hiroaki: *See*—
Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,397,808, Cl. 264-521.000.
Suh, Sang-Kee; Hauser, Gotz S.; and Johnson, Harry T., to Ford Motor Company. Method for forming splines in sheet metal. 4,397,171, Cl. 72-348.000.
Sukekawa, Ikuo: *See*—
Ishida, Nobuhiro; Sukekawa, Ikuo; Yasuda, Shigeo; and Yoshida, Yoshikazu, 4,397,246, Cl. 108-55.300.
Sullivan, John: *See*—
Lillibridge, Harold R.; and Sullivan, John, 4,397,262, Cl. 118-620.000.
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Sumitomo Chemical Company, Limited: *See*—
Araki, Masashi; Hibi, Takuo; Kawabe, Tomofumi; and Yamahara, Takeshi, 4,398,051, Cl. 585-640.000.
Saito, Kenji; Takisawa, Yukihisa; and Yamachika, Hiroshi, 4,398,043, Cl. 568-322.000.
Takisawa, Yukihisa; and Hasegawa, Shinichi, 4,398,047, Cl. 568-766.000.
Sumitomo Electric Industries, Ltd.: *See*—
Yoshimura, Kozo; Higashimoto, Takenobu; and Ono, Tetsuji, 4,397,524, Cl. 350-96.250.
Sumitomo Metal Industries, Ltd.: *See*—
Kondo, Katsuya; and Tajima, Shigeru, 4,398,254, Cl. 364-472.000.

Sun Pot Kabushiki Kaisha: *See—*
Iritani, Koji; and Otsuka, Akihiro, 4,397,632, Cl. 431-210.000.
Sundberg, Kurt A. R.: *See—*
Harbe, Erik O. E.; and Sundberg, Kurt A. R., 4,397,365, Cl. 180-68.500.
Sunnen Products Company: *See—*
Vanderwal, Frank E., Jr., 4,397,658, Cl. 51-72.00R.
Sure Air Limited: *See—*
Keuch, Deane R., 4,397,157, Cl. 62-180.000.
Suresh, Dev D.: *See—*
Grasselli, Robert K.; and Suresh, Dev D., 4,397,771, Cl. 252-467.000.
Sutherland, Alexander L., to United States of America, Navy. Trawl resistant sensor mount. 4,397,584, Cl. 405-172.000.
Suzuki, Go; and Michishita, Kazuo, to NGK Insulators, Ltd. Ceramic body having a metallized layer. 4,397,800, Cl. 264-61.000.
Suzuki, Kiyoshi, to Sony Corporation. Record player program selector. 4,398,278, Cl. 369-33.000.
Suzuki, Ryo: *See—*
Tsuchihashi, Michihiro; Suzuki, Ryo; Saito, Masato; and Watanabe, Heiji, 4,398,123, Cl. 315-46.000.
Suzuki, Takashi; Kitahara, Koichi; Naito, Susumu; and Tsuji, Tomoji, to Mitsubishi Gas Chemical Company, Inc. Process for producing trimellitic acid. 4,398,040, Cl. 562-413.000.
Svedberg, Lars-Olof: *See—*
Edgren, Anders T.; and Svedberg, Lars-Olof, 4,397,799, Cl. 264-53.000.
Swanson, R. T.: *See—*
Harner, R. H.; Swanson, R. T.; and Zvanut, G. J., 4,398,072, Cl. 200-146.00R.
Sweeney, William M., to Texaco Inc. Novel process for preparing diesel fuel. 4,397,655, Cl. 44-66.000.
Swift, Harold E.; and Lunden, Richard W., to Gulf Research & Development Company. Novel polymerization catalyst and process for using same to polymerize olefins. 4,398,005, Cl. 526-119.000.
Swingline Inc.: *See—*
Schueler, Marlin A., 4,397,410, Cl. 225-98.000.
Swiss Aluminium Ltd.: *See—*
Pfister, Hans; Knaisch, Otto; and Blanc, Jean-Marc, 4,397,728, Cl. 204-243.00M.
Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, 4,397,413, Cl. 228-174.000.
Swisscal Holding S.A.: *See—*
Gossalter, Rene, 4,397,350, Cl. 165-159.000.
SWS Silicones Corporation: *See—*
Adkins, James R., 4,398,010, Cl. 528-15.000.
Sybron Corporation: *See—*
Phillips, Edward L., 4,397,908, Cl. 428-243.000.
Symons, Robert S.: *See—*
Chodorow, Marvin; and Symons, Robert S., 4,398,121, Cl. 315-4.000.
Syntex (U.S.A.) Inc.: *See—*
Mroszczak, Edward; and Runkel, Richard, 4,397,862, Cl. 424-274.000.
Wilbur, Lawrence A.; and Gordon, Stanley E., 4,397,439, Cl. 248-292.100.
Szomolanyi, Geza: *See—*
Lorant, Ivan; Murlasits, Gyula; Wlasitsch, Gyula; Farkas, Ferenc; and Szomolanyi, Geza, 4,397,892, Cl. 427-245.000.
'T Hart, Rien, to XRG International, Inc. Copper catalyst for fuels. 4,397,654, Cl. 44-53.000.
Tabler, Donald C.; and Johnson, Marvin M., to Phillips Petroleum Company. Separation of monoolefins from other monoolefins. 4,398,052, Cl. 585-845.000.
Tachibana, Hajime: *See—*
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,397,864, Cl. 424-282.000.
Taira, Akio, to Olympus Optical Co., Ltd. Illumination system for microscopes. 4,397,529, Cl. 350-526.000.
Taisho Pharmaceutical Co., Ltd.: *See—*
Takano, Seiichi; Otomo, Susumu; and Amano, Takehiro, 4,398,026, Cl. 544-133.000.
Tajima, Shigeru: *See—*
Kondo, Katsuya; and Tajima, Shigeru, 4,398,254, Cl. 364-472.000.
Takada, Takuzo: *See—*
Akutsu, Masao; Ota, Akiho; and Takada, Takuzo, 4,397,629, Cl. 425-525.000.
Takada, Yoshiyasu: *See—*
Hamada, Takao; Tsuchiya, Nobuo; Inatani, Toshihiro; Takada, Yoshiyasu; Sumito, Mitsuo; Katayama, Eiji; Koitabashi, Toshimitsu; Okabe, Kyoji; and Ito, Yo, 4,397,691, Cl. 75-123.00B.
Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, to Shionogi & Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Enterosoluble hard-capsulated medicaments. 4,397,835, Cl. 424-35.000.
Takahashi, Junichi; Shibata, Takanori; Naito, Shotaro; and Tokuyama, Keiichi, to Hitachi, Ltd. Skid control method. 4,398,260, Cl. 364-565.000.
Takahashi, Masaatsu, to Diesel Kiki Co., Ltd. Centrifugal governor for internal combustion engines, having a function of releasing adaptation means. 4,397,277, Cl. 123-373.000.
Takahashi, Masahiro: *See—*
Mizokawa, Sadao; Yasumoto, Seiichi; and Takahashi, Masahiro, 4,398,288, Cl. 370-86.000.
Takahashi, Nobuyuki; and Furuno, Yoshikuni, to Nippon Steel Corporation. Process for producing deep-drawing cold rolled steel strip by continuous annealing. 4,397,699, Cl. 148-12.00C.
Takahashi, Soshiro: *See—*
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,397,678, Cl. 71-72.000.
Takano, Seiichi; Otomo, Susumu; and Amano, Takehiro, to Taisho Pharmaceutical Co., Ltd. 4-Carboxy-2-acetamido thiazolidine derivatives. 4,398,026, Cl. 544-133.000.
Takashima, Toshiyuki: *See—*
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,397,976, Cl. 524-178.000.
Takeda, Shinichi; Nonobe, Masao; Ishida, Kenji; Omoto, Yorihiko; and Anno, Tatsuro, to Hercofina. Process for producing aromatic carboxylic acids and methyl esters thereof. 4,398,037, Cl. 560-77.000.
Takeshima, Sadao, to Jidosha Kiki Co., Ltd. Driving circuits of solenoid actuated devices. 4,397,368, Cl. 180-143.000.
Takeuchi, Fumio: *See—*
Waki, Masahiko; Yamagata, Hisao; Murata, Toshio; Takeuchi, Fumio; and Matsumoto, Masataka, 4,397,568, Cl. 368-321.000.
Takeuchi, Yasumasa; Yoshimura, Yoshito; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsuji, Akira, to Japan Synthetic Rubber Co., Ltd. High vinyl polybutadiene or styrene-butadiene copolymer. 4,397,994, Cl. 525-332.300.
Takezawa, Kenji; and Hiratani, Hajima, to Ajinomoto Co., Inc.; and Japan Chemical Research Co., Ltd. Novel erythropoietin product and method for the preparation thereof. 4,397,840, Cl. 424-99.000.
Taki, Kazuo; Machida, Ryoichi; and Katayama, Kouichi, to Eisai Co., Ltd. Elastase-containing composition permitting elastase to be absorbed in increased amount. 4,397,951, Cl. 435-188.000.
Takiguchi, Shinji: *See—*
Sakata, Toshio; Iwao, Soichi; and Takiguchi, Shinji, 4,397,936, Cl. 430-124.000.
Takimoto, Yukio: *See—*
Hotta, Toshinori; and Takimoto, Yukio, 4,398,291, Cl. 370-104.000.
Takisawa, Yukihisa; and Hasegawa, Shinichi, to Sumitomo Chemical Company, Limited. 2-Substituted-4,6-di-t-butylresorcinol. 4,398,047, Cl. 568-766.000.
Takisawa, Yukihisa: *See—*
Saito, Kenji; Takisawa, Yukihisa; and Yamachika, Hiroshi, 4,398,043, Cl. 568-322.000.
Tameo, Robert P.: *See—*
Feldman, Paul S.; Burge, Joseph C.; Radomski, Michael A.; and Tameo, Robert P., 4,397,471, Cl. 277-27.000.
Tamura, Sadahiro: *See—*
Nishikawa, Toshio; Tamura, Sadahiro; Ishikawa, Youhei; and Matsumoto, Haruo, 4,398,164, Cl. 333-222.000.
Tamura, Teiji; and Mayumi, Hiroshi, to Nippon Electric Co., Ltd. Integrated circuit. 4,398,266, Cl. 365-103.000.
Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Image forming method and apparatus. 4,397,537, Cl. 355-3.00R.
Tanabe, Toshio; and Yasunaka, Shinsaku, to Matsushita Electric Works, Ltd. Pump driving mechanism. 4,397,616, Cl. 417-362.000.
Tanaka, Chiaki: *See—*
Kataoka, Nobuyuki; Saito, Tasuku; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,398,000, Cl. 525-437.000.
Tanaka, Hiroaki, to Enshu Limited. Controller for automatic tool changer. 4,398,136, Cl. 318-561.000.
Tanaka, Toshio; and Makino, Tomoatsu, to Nippondenso Co., Ltd. Supply-voltage-compensated contactless ignition system for internal combustion engines. 4,397,290, Cl. 123-618.000.
Tanaka, Yoshiro; Moroi, Hayato; Kamatsu, Yukihiko; Akagi, Kazuo; Shitamatsu, Ryujiro; and Nishimura, Tadashi, to Kabushiki Kaisha Kobe Seiko Sho. Cleaning apparatus of tubular materials for use in pickling facilities for the same. 4,397,328, Cl. 134-76.000.
Tanaka, Yuji, to Tokyo Tanabe Company, Limited. Surface active material and process for preparing same. 4,397,839, Cl. 424-95.000.
Tanase, Tosio: *See—*
Kuwako, Tomohisa; and Tanase, Tosio, 4,398,109, Cl. 310-80.000.
Tanigaki, Shuzo: *See—*
Fukushima, Tomio; and Tanigaki, Shuzo, 4,398,187, Cl. 340-626.000.
Tank Services, Incorporated: *See—*
Wagoner, Robert B., 4,397,399, Cl. 220-222.000.
Taquin, Jacques R.: *See—*
Barjhoux, Yves M.; Saint Jalmes, Herve; and Taquin, Jacques R., 4,398,148, Cl. 324-307.000.
Barjhoux, Yves M.; Saint Jalmes, Herve; and Taquin, Jacques R., 4,398,150, Cl. 324-319.000.
Tarcsay, Lajos: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,397,844, Cl. 424-177.000.
Tarnedde, Franz. Lawn mower having internal combustion engine and a starting device. 4,397,274, Cl. 123-185.0BB.
Tarroux, Pierre; and Le Pochard, Jacques, to Elam Limited. Device for controlling the variations in time of the power of a lighting installation in relation to a preset programme. 4,398,131, Cl. 315-294.000.
Tashiro, Nansei: *See—*
Homma, Minoru; Okoshi, Noboru; Kudo, Kin-ichi; Shimoyama, Soichi; and Tashiro, Nansei, 4,398,016, Cl. 528-158.500.
Tassie, Douglas P., to General Electric Company. Feeder mechanism. 4,397,216, Cl. 89-33.0CA.

Taya, Akira: *See*—
Akai, Yoshimi; Taya, Akira; Mori, Leo; Narita, Kazuo; and Hirose, Masahiko, 4,397,885, Cl. 427-38.000.

Taylor, Cecil K.; and Sank, Gerald W., to Vulcan-Hart Corporation. Deep fat fryer. 4,397,299, Cl. 126-391.000.

Taylor, Robert J., to United States of America, Navy. Anchor holding capacity augmentation system. 4,397,255, Cl. 114-294.000.

Taylor, Ronald T., to Mostek Corporation. Self-loading bootstrap circuit. 4,398,270, Cl. 365-203.000.

Tayter, Maya: *See*—
Dickey, Leland C.; and Tayter, Maya, 4,397,100, Cl. 34-9.000.

Technicare Corporation: *See*—
Carlson, Roland W., 4,398,092, Cl. 250-361.00R.

Technicon Instruments Corporation: *See*—
Moussebois, Claude H.; Masson, Pierre L.; Vaerman, Jean-Pierre; Limet, Joseph; and Cambiaso, Cesar L., 4,397,960, Cl. 436-512.000.

Tefertiller, Nancy B.; and Harris, Robert F., to Dow Chemical Company, The. Curable oxirane polymers. 4,397,993, Cl. 525-328.200.

Telease, Inc.: *See*—
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., 4,398,216, Cl. 358-121.000.

Telmec Co., Ltd.: *See*—
Imahashi, Issei, 4,397,078, Cl. 29-574.000.

Teng, James: *See*—
Stubits, Marcella C.; Teng, James; and Scallet, Barrett L., 4,397,872, Cl. 426-16.000.

Tengler, Harvey N.: *See*—
Hall, Garth O.; and Tengler, Harvey N., 4,397,440, Cl. 248-550.000.

Teraji, Tsutomu; Oku, Teruo; and Shiokawa, Youichi, to Fujisawa Pharmaceutical Co., Ltd. Benzothiazine derivatives. 4,397,849, Cl. 424-246.000.

Terashima, Isamu, to Hitachi, Ltd. Particle level sensing apparatus. 4,397,265, Cl. 118-694.000.

Terashita, Takaaki, to Fuji Photo Film Co., Ltd. Exposure control method. 4,397,545, Cl. 355-77.000.

Terry, Lynn E.; and Schoeppel, Roger J. Power cycles based upon cyclical hydriding and dehydriding of a material. 4,397,153, Cl. 60-649.000.

Texaco Inc.: *See*—
Sweeney, William M., 4,397,655, Cl. 44-66.000.

Texas Instruments Incorporated: *See*—
Lin, Kun-Shan; Goudie, Kathleen M.; and Frantz, Gene A., 4,398,059, Cl. 179-1.0SM.

Thayer, Stevan J.: *See*—
Darling, Donald W.; Dennis, Thomas M.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,398,299, Cl. 375-8.000.
Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,398,297, Cl. 375-7.000.

Therapeutic Appliances, Inc.: *See*—
Hepburn, George R., 4,397,308, Cl. 128-88.000.

Thibault, Gilbert; and Mayotte, David C., to C-I-L Inc. Manufacture of calcium hypochlorite. 4,397,832, Cl. 423-474.000.

Thiel, Hans-Joachim. Device for embossing braille code characters. 4,397,573, Cl. 400-122.000.

Thiel, Max: *See*—
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,397,848, Cl. 424-244.000.

Thierion, Michel. Machine for loading and unloading containers of articles arranged in rows. 4,397,130, Cl. 53-77.000.

Thies, Edward J.: *See*—
Michlin, Norman; and Thies, Edward J., 4,397,663, Cl. 55-387.000.

Thiokol Corporation: *See*—
Wade, Robert C., 4,397,948, Cl. 521-82.000.

Thoma, Paul E.: *See*—
Klein, Carl F.; Buchanan, Stuart R.; Thoma, Paul E.; and Klimek, David L., 4,397,702, Cl. 156-153.000.

Thomas A. Schutz Co., Inc.: *See*—
Eckert, Ronald P., 4,397,705, Cl. 156-242.000.

Thomas Broadbent & Sons Limited: *See*—
Jackson, Joseph F., 4,397,795, Cl. 261-89.000.

Thomas, Robert W., Jr. Manicuring device. 4,397,324, Cl. 132-73.500.

Thompson, Don D.; Brown, Robert J. S.; and Runge, Richard J., to Chevron Research Company. Method for interpreting seismic records to yield indications of gas/oil in an earth formation. 4,398,273, Cl. 367-73.000.

Thomson - CSF: *See*—
Barjhoux, Yves M.; Saint Jalmes, Herve; and Taquin, Jacques R., 4,398,148, Cl. 324-307.000.
Barjhoux, Yves M.; Saint Jalmes, Herve; and Taquin, Jacques R., 4,398,150, Cl. 324-319.000.
Benoit-Gonin, Roger; Berger, Jean-Luc; Coutures, Jean-Louis; Forster, Daniel; and Picquendar, Jean-Edgar, 4,398,099, Cl. 307-246.000.
Cornet, Jean, 4,398,203, Cl. 346-135.100.
Galves, Jean-Pierre; and Gutierrez, Jean-Marie, 4,398,118, Cl. 313-527.000.
Gosset, Philippe, 4,398,122, Cl. 315-5.380.
Guillon, Jean Pierre, 4,398,120, Cl. 315-1.000.

Thomson-CSF Broadcast, Inc.: *See*—
McMann, Renville H., Jr., 4,398,061, Cl. 179-1.0VL.

Thornton, Henry M.; and Thornton, John S., to Ashcombe Products Company. Method of forming a gang cutting tool assembly and tool formed thereby. 4,397,074, Cl. 29-564.000.

Thornton, James H. Competitive board game. 4,397,467, Cl. 273-256.000.

Thornton, John S.: *See*—
Thornton, Henry M.; and Thornton, John S., 4,397,074, Cl. 29-564.000.

Thornton, Robert L., to Seabrook Blanching Corporation. Self-adjusting apparatus for slitting peanuts. 4,397,228, Cl. 99-541.000.

Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., to Research Triangle Institute. Inhibition of respiratory syncytial virus-induced cell fusion by amidino compounds. 4,397,863, Cl. 424-274.000.

Tienkamp, Engbert: *See*—
Van Egmond, Johannes A. M.; Klein, Johannes; and Tienkamp, Engbert, 4,398,298, Cl. 375-7.000.

Timex Corporation: *See*—
Carl, Stewart, 4,397,567, Cl. 368-309.000.

Titus, Theodore, IV; and Bagley, Julius B., to Lanier Business Products, Inc. Digital display for dictation transcriber for indicating remaining tape within discrete segments of dictation. 4,398,279, Cl. 369-58.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,397,788, Cl. 260-441.000.

Tobita, Yosuichi; and Nishizawa, Hiroshi, deceased (by Nishizawa, Kazuo, Emiko Nishizawa, heirs), to Mitsubishi Denki Kabushiki Kaisha. Booster circuit. 4,398,100, Cl. 307-264.000.

Toho Belson Co., Ltd.: *See*—
Saito, Kazuhisa; and Ogawa, Hiroyasu, 4,397,831, Cl. 423-447.600.

Tokuyama, Keiichi: *See*—
Takahashi, Junichi; Shibata, Takanori; Naito, Shotaro; and Tokuyama, Keiichi, 4,398,260, Cl. 364-565.000.

Tokuyama Sekisui Kogyo Kabushiki Kaisha: *See*—
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,397,976, Cl. 524-178.000.

Tokyo Pet Cage Co., Ltd.: *See*—
Watanabe, Mikio, 4,397,398, Cl. 220-7.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Akai, Yoshimi; Taya, Akira; Mori, Leo; Narita, Kazuo; and Hirose, Masahiko, 4,397,885, Cl. 427-38.000.
Furuyama, Tohru, 4,398,267, Cl. 365-182.000.
Hirose, Minoru; Hara, Junichiro; and Kubotera, Hiroyuki, 4,398,088, Cl. 235-379.000.
Satoh, Tatsuaki, 4,398,220, Cl. 358-188.000.
Washizuka, Syoichi; Ushizawa, Jinaburo; Kokubun, Yoshihiro; and Fukuda, Tsuguo, 4,397,813, Cl. 422-109.000.
Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, 4,397,923, Cl. 427-162.000.

Tokyo Tanabe Company, Limited: *See*—
Tanaka, Yuji, 4,397,839, Cl. 424-95.000.

Tompkins, Terry C.: *See*—
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; Twieg, Robert J.; and Willson, Carlton G., 4,397,937, Cl. 430-192.000.

Toray Industries, Inc.: *See*—
Kataoka, Nobuyuki; Saito, Tasuku; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,398,000, Cl. 525-437.000.

Toro Company, The: *See*—
Hampel, Wilbur J., 4,397,088, Cl. 30-296.00R.

Totten, Roger W.: *See*—
Mayfield, Johnny W.; and Totten, Roger W., 4,397,202, Cl. 82-4.00R.

Toyama, Teruhiko: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,397,864, Cl. 424-282.000.

Toyo Kogyo Co., Ltd.: *See*—
Iida, Katsuyoshi, 4,397,279, Cl. 123-440.000.
Ohya, Eizaburo, 4,397,486, Cl. 285-368.000.

Toyo Seikan Kaisha Ltd.: *See*—
Ueno, Hiroshi; Miyamatsu, Yasunori; Aizawa, Masanori; Kaga, Yasuo; and Ishibashi, Kazuhisa, 4,397,401, Cl. 220-260.000.

Toyoda, Kazuhiro, to Fujitsu Limited. Semiconductor integrated circuit device. 4,398,268, Cl. 365-190.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Itoh, Hiroshi; Watanabe, Haruo; and Kobashi, Mamoru, 4,397,275, Cl. 123-339.000.
Nakano, Jiro; Ono, Hironobu; and Miyagi, Hideo, 4,397,281, Cl. 123-486.000.
Ogawa, Hisashi; and Imai, Yoshikazu, 4,397,482, Cl. 280-802.000.

Transidyne General Corp.: *See*—
Enzer, Steven E.; and Sarrine, Robert J., 4,397,725, Cl. 204-406.000.

Trattner, Burton C. Adapter permitting smaller size battery cell to function in larger size applications. 4,397,920, Cl. 429-100.000.

TRE Corporation: *See*—
Rotondi, Anthony J.; and Mullich, Richard O., 4,397,168, Cl. 70-417.000.

Trepanier, Gaston. Protective bonnet for beekeepers. 4,397,044, Cl. 2-4.000.

Troller, Robert J., to CECOR Incorporated. Filter cartridge for sump cleaner. 4,397,745, Cl. 210-237.000.

Truck Safety Systems, Inc.: *See*—
Mettetal, Bert J., 4,397,474, Cl. 280-423.00A.

True Temper Corporation: *See*—
Marsh, Ronald P.; and Luebke, Robert W., 4,397,899, Cl. 428-77.000.

TRW, Inc.: *See—*
Wahlers, Richard L.; and Merz, Kenneth M., 4,397,915, Cl. 428-432.000.

Tsai, Jing-Hwang. Push-type wire terminating apparatus. 4,397,518, Cl. 339-255.00R.

Tsakumis, Theodore G., to Du Pont de Nemours, E. I., and Company. Process for preparing PTFE powdered resins containing pigments employing ammonium carbonate or ammonium bicarbonate. 4,397,980, Cl. 524-424.000.

Tsitlik, Joshua E.: *See—*
Weisfeldt, Myron L.; Tsitlik, Joshua E.; and Chandra, Nisha, 4,397,306, Cl. 128-28.000.

Tsubaki, Kazumi; Koto, Noriaki; and Abe, Toyohiko, to Nissan Chemical Industries Ltd. Process for producing polybutene-1. 4,398,006, Cl. 526-127.000.

Tsuchihashi, Michihiro; Suzuki, Ryo; Saito, Masato; and Watanabe, Heiji, to Mitsubishi Denki Kabushiki Kaisha. High pressure discharge lamp. 4,398,123, Cl. 315-46.000.

Tsuchiya, Nobuo: *See—*
Hamada, Takao; Tsuchiya, Nobuo; Inatani, Toshihiro; Takada, Yoshiyasu; Sumito, Mitsuo; Katayama, Eiji; Koitabashi, Toshimitsu; Okabe, Kyoji; and Ito, Yo, 4,397,691, Cl. 75-123.00B.

Tsuji, Akira: *See—*
Takeuchi, Yasumasa; Yoshimura, Yoshito; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsuji, Akira, 4,397,994, Cl. 525-332.300.

Tsuji, Tomoji: *See—*
Suzuki, Takashi; Kitahara, Koichi; Naito, Susumu; and Tsuji, Tomoji, 4,398,040, Cl. 562-413.000.

Tsukahara, Kenji: *See—*
Naitoh, Masataka; Urano, Susumu; Kuroda, Minoru; Kojima, Yasuhumi; and Tsukahara, Kenji, 4,398,258, Cl. 364-551.000.

Tsunekawa, Masayoshi: *See—*
Komura, Tamotsu; Tsunekawa, Masayoshi; and Yuhda, Sadayuki, 4,397,944, Cl. 435-4.000.

Tuck, Brian: *See—*
Dingwall, John G.; and Tuck, Brian, 4,398,033, Cl. 549-329.000.

Turchi, Peter J., to United States of America, Air Force. Power circuit utilizing self excited Hall effect switch means. 4,397,147, Cl. 60-202.000.

Turner, James A.: *See—*
Baker, Elwood B.; and Turner, James A., 4,398,241, Cl. 364-167.000.

Turolla, Jean P.: *See—*
Barraire, Michel; Roux, Marcel; and Turolla, Jean P., 4,397,512, Cl. 339-75.00M.

Twieg, Robert J.: *See—*
Ciecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; Twieg, Robert J.; and Willson, Carlton G., 4,397,937, Cl. 430-192.000.

Twilley, Ian C.: *See—*
Merrill, Robert G.; Lofquist, Robert A.; Weedon, Gene C.; Haylock, John C.; and Twilley, Ian C., 4,398,012, Cl. 528-84.000.

Udagawa, Takatoshi: *See—*
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,397,864, Cl. 424-282.000.

Uecker, Mary J. H., executrix: *See—*
Uecker, Ronald L., deceased; and Uecker, Mary J. H., executrix, 4,397,253, Cl. 114-218.000.

Uecker, Ronald L., deceased; and by Uecker, Mary J. H., executrix. Rope cleat teeth structure. 4,397,253, Cl. 114-218.000.

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Morimoto, Hiroshi; Inoue, Hajime; and Ueda, Kazuo, 4,397,667, Cl. 65-30.130.

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Ujfalusi, Elek: *See—*
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Ulin, Roy A.: *See—*
Hof, Craig R.; Ulin, Roy A.; and Nickoloff, Dennis, 4,397,570, Cl. 374-162.000.

Ulrich Steinemann AG, Maschinenfabrik: *See—*
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UMC Industries, Inc.: *See—*
Gilliom, John W., 4,397,875, Cl. 426-523.000.

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Union Carbide Corporation: *See—*
Maddever, Wayne J.; Burns, Michael T.; and Lewis, Jennings B., 4,397,685, Cl. 75-60.000.

Union Oil Company of California: *See—*
Kay, D. Alan R.; and Wilson, William G., 4,397,683, Cl. 75-58.000.
Young, Donald C., 4,397,675, Cl. 71-28.000.

Uniroyal, Inc.: *See—*
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Stott, Paul E., 4,397,965, Cl. 521-128.000.

United Kingdom Atomic Energy Authority: *See—*
Cairns, James A.; Woodhead, James L.; and Ramsay, John D. F., 4,397,770, Cl. 252-465.000.
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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
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United Merchants & Manufacturers, Inc.: *See—*
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United States Brass Corporation: *See—*
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United States Gypsum Company: *See—*
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United States of America
Air Force: *See—*
Benedict, Douglas M., 4,398,085, Cl. 377-20.000.
Farnham, Charles J., 4,397,434, Cl. 244-158.00R.
Genco, Louis V.; and Eggleston, Robert G., 4,397,554, Cl. 356-239.000.
Lamb, Franklin D.; Kiss, Steve, Jr.; and Krueger, Thomas K., 4,398,161, Cl. 333-156.000.
Turchi, Peter J., 4,397,147, Cl. 60-202.000.
Army: *See—*
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Miller, Thomas G.; Hagefstration, John E.; Womack, Dennis R.; and McDaniel, Bonnie G., 4,398,294, Cl. 372-70.000.
Morgan, Clifford E., 4,397,549, Cl. 356-5.000.
Rittenbach, Otto E., 4,398,153, Cl. 328-16.000.
Sharpe, James L., 4,398,089, Cl. 250-336.100.
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Neville, David M., Jr.; Youle, Richard J.; and Murray, Gary J., 4,397,843, Cl. 424-177.000.
Pomerantzeff, Oleg, 4,397,310, Cl. 128-303.100.
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National Aeronautics and Space Administration: *See—*
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Logan, Kenyon E., 4,398,129, Cl. 315-208.000.
St. Clair, Terry L.; and Yamaki, David A., 4,398,021, Cl. 528-222.000.
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Dillard, George M., 4,398,197, Cl. 343-100.0LE.
Johnson, Nancy C.; Gotzmer, Carl; and Graff, Mark, 4,397,700, Cl. 149-7.000.
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Zehner, William J., 4,398,275, Cl. 367-137.000.

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Fouilloy, Jean-Pierre, 4,397,429, Cl. 244-3.110.
Haisma, Jan; Boesten, Johannes K. A.; and deVroome, Henderikus, 4,397,669, Cl. 65-30.140.
Haverkamp, Antonius P.; and Kerkhof, Klaas W., 4,397,624, Cl. 425-113.000.
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Schoute, Frederik C., 4,398,289, Cl. 370-93.000.
Van Egmond, Johannes A. M.; Klein, Johannes; and Tienkamp, Engbert, 4,398,298, Cl. 375-7.000.

U.S. Steel Corporation: *See—*
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United Technologies Corporation: *See—*
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Universal Developer Corporation: *See—*
Michlin, Norman; and Thies, Edward J., 4,397,663, Cl. 55-387.000.

Universal Research Laboratories, Incorporated: *See—*
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University of California, The Regents of the: *See—*
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Miles, John A.; Rumsey, James W.; and Mehlschau, James J., 4,397,473, Cl. 280-6.00H.
Sarkar, Siddhartha, 4,397,954, Cl. 435-287.000.

University of Pennsylvania, The: *See—*
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University of Utah: *See*—
Janata, Jiri; Huber, Robert J.; and Smith, Rosemary L., 4,397,714, Cl. 204-1.00T.
Miller, Jan D., 4,397,741, Cl. 209-170.000.
Unsold, Eberhard: *See*—
Eloy, Jean-Francois; and Unsold, Eberhard, 4,398,090, Cl. 250-299.000.
UOP Inc.: *See*—
Dodd, Malcolm J., 4,397,159, Cl. 62-382.000.
Firth, Bruce E., 4,398,048, Cl. 568-781.000.
Hall, Garth O.; and Tengler, Harvey N., 4,397,440, Cl. 248-550.000.
Kemp, Thomas L., 4,397,738, Cl. 208-161.000.
Upjohn Company, The: *See*—
Allen, Harry R., 4,397,845, Cl. 424-180.000.
Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., 4,397,950, Cl. 435-125.000.
Robert, Andre; and Elliott, George A., 4,397,865, Cl. 424-317.000.
Sih, John C., 4,398,025, Cl. 542-429.000.
Walker, Jerry A., 4,398,035, Cl. 560-20.000.
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Ushizawa, Jisaburo: *See*—
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USM Corporation: *See*—
Meeker, Gregory W., 4,397,630, Cl. 425-582.000.
Usui, Toshifumi; Kohno, Takashige; Osawa, Tadao; and Sakuma, Tokihiko, to Hitachi, Ltd. Throttle valve linkage for use with multi-carburetor assembly. 4,397,792, Cl. 261-23.00A.
Uteh and Haug GmbH: *See*—
Haug, Erich; and Storz, Siegbert, 4,397,640, Cl. 604-33.000.
V.G.A.S., Inc.: *See*—
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Vadstena Pumpar AB: *See*—
Johansson, Lars S.; and Nordqvist, Bert S., 4,397,418, Cl. 237-59.000.
Vaerman, Jean-Pierre: *See*—
Moussebois, Claude H.; Masson, Pierre L.; Vaerman, Jean-Pierre; Limet, Joseph; and Cambiaso, Cesar L., 4,397,960, Cl. 436-512.000.
Vaguine, Victor A., to Clini-Therm Corporation. Multiple microwave applicator system and method for microwave hyperthermia treatment. 4,397,313, Cl. 128-399.000.
Vaguine, Victor A., to Clini-Therm Corporation. Method and apparatus for controlling and optimizing the heating pattern for a hyperthermia system. 4,397,314, Cl. 128-399.000.
Valinski, Peter J., Sr., to Warner & Swasey Company, The. Adjustable crankpin locators for a crankshaft grinding machine. 4,397,119, Cl. 51-165.00R.
Vandenberg, Philippe: *See*—
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Van der Pas-Toornstra, Hilde M., to Shell Oil Company. Process for the removal of H_2S and CO_2 from a gas mixture. 4,397,660, Cl. 55-48.000.
Vanderpool, Clarence D.; Martin, Brice E.; and Gingerich, Richard G. W., to GTE Products Corporation. Process for recovering gold. 4,397,690, Cl. 75-108.000.
Vanderwal, Frank E., Jr., to Sunnen Products Company. Feed control means for honing and like machines. 4,397,658, Cl. 51-72.00R.
Van Deursen, Gary E., to General Electric Company. Foldable mirror. 4,397,526, Cl. 350-310.000.
VanDyke, Ronald D.: *See*—
Hammonds, James C.; Stoller, Patricia S.; and VanDyke, Ronald D., 4,397,594, Cl. 410-59.000.
Van Egmond, Johannes A. M.; Klein, Johannes; and Tienkamp, Engbert, to U.S. Philips Corporation. Communication system having stations capable of detecting another station's simultaneous initiation of transmission. 4,398,298, Cl. 375-7.000.
van Es, Kees. Container for packed wire bundles. 4,397,390, Cl. 206-391.000.
van Gils, Adrianus W. Aminated winding for electric machines. 4,398,112, Cl. 310-201.000.
van Hove, Cornelius: *See*—
Gerth, Dieter; Schatz, Friedrich; and van Hove, Cornelius, 4,398,058, Cl. 174-106.00D.
Van Roeyen, Harry P., to Barristo, Ltd. Abrasive article. 4,397,325, Cl. 132-76.400.
Varian Associates, Inc.: *See*—
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VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See*—
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VEB Wissenschaftlich-Technischer Betrieb Wirtschaftsglas Bad Muskau: *See*—
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Velsicol Chemical Corporation: *See*—
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Veres, James E.: *See*—
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Versabar, Inc.: *See*—
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Vetco Offshore, Inc.: *See*—
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Vetter, Artur, deceased; by Vetter, Genoveva, nee Freisinger, heir; by Vetter, Robert, heir; and by Vetter, Mona, heir. Feeding chain for feeding a packaging material web in a packaging machine. 4,397,411, Cl. 226-173.000.
Vetter, Genoveva, nee Freisinger, heir: *See*—
Vetter, Artur, deceased; Vetter, Genoveva, nee Freisinger, heir; Vetter, Robert, heir; and Vetter, Mona, heir, 4,397,411, Cl. 226-173.000.
Vetter, Mona, heir: *See*—
Vetter, Artur, deceased; Vetter, Genoveva, nee Freisinger, heir; Vetter, Robert, heir; and Vetter, Mona, heir, 4,397,411, Cl. 226-173.000.
Vetter, Robert, heir: *See*—
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Vibroflotation Foundation Company: *See*—
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Segawa, Keiji; Matsuda, Norio; and Murakami, Masaki, 4,398,282, Cl. 369-126.000.
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Vierck, Gary L.: *See*—
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Vigh, Zoltan, to Zepco, Inc. Gas turbine. 4,397,146, Cl. 60-39.750.
Villa-Real, Antony-Euclid C. Electronic blood pressure and pulse rate calculator with optional temperature indicator, timer and memory. 4,397,317, Cl. 128-680.000.
Villain, Jacques, to Compagnie des Lampes. Solar sensor equipped with solar energy absorbing member and panel having such sensors. 4,397,304, Cl. 126-443.000.
Vincent, Michel; Remond, Georges; and Laubie, Michel, to Science Union et Cie. Azabicycloоctane-carboxylic acids and pharmaceutical compositions containing them and antihypertensive use thereof. 4,397,857, Cl. 424-263.000.
Vinegar, Harold J.; and Waxman, Monroe H., to Shell Oil Company. Method for correcting an electrical log for the presence of shale in a formation. 4,398,151, Cl. 324-323.000.
Vlad, Constantin M.: *See*—
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Voelz, Frederick L.: *See*—
Ballou, Edmund W.; Voelz, Frederick L.; and Collins, Thomas A., 4,397,183, Cl. 73-293.000.
Vogel, Ernst, to Elekto-Apparatebau Olten, A.G. Mechanical switch. 4,398,075, Cl. 200-314.000.
Volker, Karl-Heinz: *See*—
Heisig, Rolf; Klein, Hans-Hermann; and Volker, Karl-Heinz, 4,397,156, Cl. 62-6.000.
Vong, Sandy T. S., to Ford Motor Company. Method of placing a metal oxide film on a surface of a heated glass substrate. 4,397,671, Cl. 65-60.520.
von Hoerschelmann, Detlef; Seidel, Hans; Berger, Gerhard; Masuth, Armin; Beaucamp, Klaus; and Gruber, Wolfgang, to Boehringer Mannheim GmbH. Process for obtaining glucose dehydrogenase and micro-organism therefor. 4,397,952, Cl. 435-190.000.

von Konig, Anita; Moll, Franz; and Oediger, Hermann, to Agfa-Gevaert Aktiengesellschaft. Photographic material, process for the production thereof, process for the production of photographic images and new compounds. 4,397,942, Cl. 430-446.000.

Vromans, Petrus H. G. M.: *See*—
Lotgering, Frederik K.; and Vromans, Petrus H. G. M., 4,397,796, Cl. 264-24.000.

Vroom, Theo, to Foxboro Company, The. Hydrocarbon analysis. 4,397,958, Cl. 436-141.000.

VSL Corporation: *See*—
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W. E. Saxby (Nottingham) Limited: *See*—
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W. Schlafhorst & Co.: *See*—
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Rohner, Joachim; Zumfeld, Heinz; and Romic, Ivica, 4,397,138, Cl. 57-22.000.
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Wada, Shozo: *See*—
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Wade, Robert C., to Thiokol Corporation. Alkali metal borohydride concentrate. 4,397,948, Cl. 521-82.000.

Wadkins, Charles K.: *See*—
Gowan, William L.; and Wadkins, Charles K., 4,397,659, Cl. 55-41.000.

Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, to Swiss Aluminium Ltd. Process for manufacturing plastically deformed light metal objects having a connector part of a different metal. 4,397,413, Cl. 228-174.000.

Wagner, Hans: *See*—
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Wagner, Helmar R.: *See*—
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Wagner, Karl, to Siemens Aktiengesellschaft. Circuit arrangement for determining the zone of origin of a telephone connection. 4,398,065, Cl. 179-18.0FG.

Wagner, Rudolf: *See*—
Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf, 4,398,042, Cl. 568-62.000.

Wagner, Thomas R.: *See*—
Flinchbaugh, David E.; Hill, Raymond R.; Shaffer, Robert; and Wagner, Thomas R., 4,398,110, Cl. 310-83.000.

Wagoner, Robert B., to Tank Services, Incorporated. Seal for floating roofs of storage tanks. 4,397,399, Cl. 220-222.000.

Wahlers, Richard L.; and Merz, Kenneth M., to TRW, Inc. Electrical resistor material, resistor made therefrom and method of making the same. 4,397,915, Cl. 428-432.000.

Wakahata, Tamotsu: *See*—
Inoue, Takao; Wakahata, Tamotsu; Maeda, Yukio; and Niboshi, Ikuo, 4,397,723, Cl. 204-159.150.

Waki, Masahiko; Yamagata, Hisao; Murata, Toshio; Takeuchi, Fumio; and Matsumoto, Masataka, to Citizen Watch Company Limited. Timepiece push-button structure. 4,397,568, Cl. 368-321.000.

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Waldmeier, Hugues E. Conductor strip and housing therefor for a current conductor rail. 4,398,068, Cl. 191-23.00A.

Walker, Jerry A., to Upjohn Company, The. Malonic acids and esters thereof. 4,398,035, Cl. 560-20.000.

Walker, Kenneth G., to Hilliard-Lyons Patent Management, Inc. Sheet metal attachment system and method for installation of mine brattices. 4,397,224, Cl. 98-50.000.

Walter, John, to Continental Group, Inc., The. Method for assembling container halves. 4,397,073, Cl. 29-446.000.

Walter, John, to Continental Group, Inc., The. Nondetachable resealable closure. 4,397,400, Cl. 220-259.000.

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Walters, Buford T., to United States of America, Army. Cryogenic cooler puller. 4,397,070, Cl. 29-256.000.

Walty, Robert J., to Raychem Corporation. End seal for strip heaters. 4,398,084, Cl. 219-528.000.

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Ward, James F., to Procter & Gamble Company, The. Liquid detergent compositions containing alpha-amine oxide surfactants. 4,397,776, Cl. 252-527.000.

Warm Window, Inc.: *See*—
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Warren, Donald R.; and Warren, Kenneth D., to Spokane Crusher Mfg. Co. Shoe bracket assembly for vertical shaft impact crushing machines. 4,397,426, Cl. 241-275.000.

Warren, Gilbert G.: *See*—
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Warren, James W. Composite article and method of making same. 4,397,901, Cl. 428-101.000.

Warren, Kenneth D.: *See*—
Warren, Donald R.; and Warren, Kenneth D., 4,397,426, Cl. 241-275.000.

Warzel, F. Morgan, to Phillips Petroleum Company. Discharge of solids. 4,397,731, Cl. 208-8.0LE.

Washburn, Monard G. Work piece holder. 4,397,245, Cl. 108-7.000.

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Watanabe, Haruo: *See*—
Itoh, Hiroshi; Watanabe, Haruo; and Kobashi, Mamoru, 4,397,275, Cl. 123-339.000.

Watanabe, Heiji: *See*—
Tsuchihashi, Michihiro; Suzuki, Ryo; Saito, Masato; and Watanabe, Heiji, 4,398,123, Cl. 315-46.000.

Watanabe, Mikio, to Tokyo Pet Cage Co., Ltd. Compact collapsible containers. 4,397,398, Cl. 220-7.000.

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Watanabe, Nobuatsu: *See*—
Watanabe, Morio; Nishimura, Sanji; and Watanabe, Nobuatsu, 4,397,682, Cl. 75-0.50A.

Watanabe, Nobuhiko, to Sony Corporation. Time base correcting apparatus. 4,398,224, Cl. 358-339.000.

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Water Services of American, Inc.: *See*—
Baron, Walter J.; and Cleaver, Laird C., 4,397,349, Cl. 165-95.000.

Watkins, Hugh: *See*—
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,398,038, Cl. 560-103.000.

Watkins, Richard R.: *See*—
Long, Nicholas R.; Peisel, William E.; Ryan, Joseph L.; Stafford, John P.; and Watkins, Richard R., 4,398,190, Cl. 340-728.000.

Wattron, Albert, to Belrecolt S.A. Forkless haymaking machine. 4,397,135, Cl. 56-377.000.

Waxman, Monroe H.: *See*—
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Weaver, Max A.: *See*—
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Webb, Clarence M. Film editing device. 4,397,532, Cl. 352-129.000.

Weber, Adam: *See*—
Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, 4,398,073, Cl. 200-295.000.

Weber, Gerd: *See*—
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Webster, James A.: *See*—
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Weedon, Gene C.: *See*—
Merrill, Robert G.; Lofquist, Robert A.; Weedon, Gene C.; Haylock, John C.; and Twilley, Ian C., 4,398,012, Cl. 528-84.000.

Weiner, Murray; and Gersonde, Klaus. Storage-stable lipid vesicles and method of preparation. 4,397,846, Cl. 424-199.000.

Weisfeldt, Myron L.; Tsitlik, Joshua E.; and Chandra, Nisha, to John Hopkins University, The. Integrated system for cardiopulmonary resuscitation and circulation support. 4,397,306, Cl. 128-28.000.

Weiss, Richard T., to Exxon Production Research Co. Offshore arctic structure. 4,397,586, Cl. 405-217.000.

Welch, M. Bruce, to Phillips Petroleum Company. Catalyst and process of polymerization of alpha-monoolefins. 4,397,763, Cl. 252-429.00B.

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Johnson, Arthur D., 4,397,291, Cl. 123-640.000.

Welter, Andre; Lautenschlager, Hans-Heiner; Etschenberg, Eugen; and Leyck, Sigurd, to A. Nattermann & Cie GmbH. Treatment of rheumatism and arteriosclerosis with n-halogenophenyl-benzisothiazoles. 4,397,858, Cl. 424-270.000.

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Westerkamp, Jurgen, to Windmoller & Holscher. Reciprocating doctor mechanism. 4,397,238, Cl. 101-367.000.

Western Electric Co., Inc.: *See*—
Booth, Raymond H.; Monahan, Jack J.; and Schneider, Fred J., 4,397,385, Cl. 198-345.000.
Ebrey, Roger G. A.; and Sckerl, Herbert A., 4,397,084, Cl. 29-749.000.
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Wey, Edmund; Kathke, Gregor; Knors, Herbert; and Rosen, Klaus, to W. Schlafhorst & Co. Controlled compressed air splicing device. 4,397,139, Cl. 57-22.000.

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Whittam, Thomas V., to Imperial Chemical Industries PLC. Zeolites Nu-6(1) and Nu-6(2). 4,397,825, Cl. 423-277.000.

Wie, Chwang T. Water heater heat reclaimer. 4,397,297, Cl. 126-365.000.

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Wiesner, John C.; and Veneklasen, Lee H., to Perkin-Elmer Corp., The. Particle beam instrumentation ion pump. 4,397,611, Cl. 417-49.000.

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Williams, Harry K. Auriferous gravel interceptor. 4,397,503, Cl. 299-8.000.

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Wilson, Warren. Apparatus for and method of making funnel cakes. 4,397,879, Cl. 426-115.000.

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Wojdyla, Gary A., to NCR Corporation. Reloadable ribbon cassette. 4,397,574, Cl. 400-196.100.

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Xenzhek, Oktavian S.; Shembel, Elena M.; Litvinova, Valentina I.; Martynenko, Tamara L.; Raikhelson, Leonid B.; Sokolov, Leonid A.; and Moskovsky, Valentin Z., to Dnepropetrovsky Khimiko-Tekhnologichesky Institut Imeni F.E. Dzerzhinskogo. Electrochemical cell containing sulphur dioxide as cathodic depolarizer. 4,397,921, Cl. 429-105.000.

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Antos, Ronald L.; Brueggemann, Harry P.; and Grafton, David A., 4,397,521, Cl. 350-6.800.
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Yarnold, Daniel J., to Carrier Corporation. Apparatus and method for securing tube supports in a coil bundle. 4,397,068, Cl. 29-157.400.

Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing an optical recording element. 4,397,923, Cl. 427-162.000.

Yasuda, Nobuyuki, to Sony Corporation. Switching apparatus for the recording and reproducing of PCM or video signals. 4,398,219, Cl. 358-167.000.

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Young, Donald C., to Union Oil Company of California. Method of producing urea-sulfuric acid reaction products. 4,397,675, Cl. 71-28.000.

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Young, Ian T. Solid state optical microscope. 4,398,211, Cl. 358-93.000.

Yount, Jo: *See*—
Chumbley, James F.; Corke, Michael W.; and Yount, Jo, 4,397,346, Cl. 160-84.00R.

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Yuasa, Yoshio: *See*—
Naruse, Kazuhiko; Yuasa, Yoshio; and Ishikawa, Norio, 4,397,533, Cl. 354-23.00D.

Yuen, Johnny S. C.: *See*—
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Zehner, William J., to United States of America, Navy. Linear frequency sweep generator for continuous transmission FM sonar. 4,398,275, Cl. 367-137.000.

Zenith Radio Corporation: *See*—
Beaumont, Gregory J.; Godawski, Theodore J.; McShane, James P.; and Parker, James J., 4,398,133, Cl. 315-411.000.
Campisi, Carl; and Sron, Harry F., 4,398,236, Cl. 361-419.000.

Zens, Albert P., to Varian Associates, Inc. NMR Probe coil system. 4,398,149, Cl. 324-319.000.

Zepco, Inc.: *See*—
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Ziegler, Michael L.: *See*—
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Ziemacki, Michael S.: *See*—
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Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,398,297, Cl. 375-7.000.

Zinser Textilmaschinen GmbH: *See*—
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Zuch, Howard W., to Baylor Company. Eddy current brake. 4,398,111, Cl. 310-93.000.

Zuchtriegel, Anton, to Patent-Truehand-Gesellschaft fur Elektrische Gluhlampen GmbH. Protected low-pressure discharge lamp operating circuit. 4,398,126, Cl. 315-127.000.

Zumfeld, Heinz: *See*—
Rohner, Joachim; Zumfeld, Heinz; and Romic, Ivica, 4,397,138, Cl. 57-22.000.

Zumsteg, Fredrick C., Jr.: *See*—
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Zvanut, G. J.: *See*—
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Zwettler, Ernst. Automatic conveyor for dental film chip processing. 4,397,536, Cl. 354-322.000.

Zylbert, Thaddeus J.; and Hurler, Herbert T., to Singer Company, The. Thread controlling arrangement for bobbin winding mechanism. 4,397,250, Cl. 112-184.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF AUGUST, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Blount, David H. Process for the production of poly (polyisocyanate-polyol-alkali metal silicate) solid. Re. 31,340, Cl. 524-650.000.

Ciba-Geigy Corporation: *See*—
Holt, Brian; and Randell, Donald R., Re. 31,342, Cl. 542-427.000.
Holt, Brian; and Randell, Donald R., Re. 31,343, Cl. 546-188.000.

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Dardi, Louis E.; and Freeman, William R., Jr., to Howmet Turbine Components Corporation. Process for producing elevated temperature corrosion resistant metal articles. Re. 31,339, Cl. 428-678.000.

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Horsley, Ronald L. Combined bottle cap and spoon. 270,044, 8-9-83, Cl. D9-436.000.

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CLASSIFICATION OF PATENTS

ISSUED AUGUST 9, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

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477 4,397,650
506 4,397,651
524 4,397,652

CLASS 10

107 PH 4,397,054

CLASS 15

22 R 4,397,055
4,397,056
321 4,397,057
325 4,397,058
328 4,397,059
377 4,397,060

CLASS 16

2 4,397,061
33 4,397,062
90 4,397,063
379 4,397,064

CLASS 19

80 R 4,397,065

CLASS 24

108 4,397,067

CLASS 29

157.4 4,397,068
173 4,397,069
256 4,397,070
401.1 4,397,071
4,397,072
446 4,397,073
527.6 4,397,080
564 4,397,074
571 4,397,075
4,397,076
4,397,077
574 4,397,078
576 B 4,397,079
599 4,397,081
622 4,397,082
623.2 4,397,083
749 4,397,084
850 4,397,085
868 Re.31,336
876 4,397,086

CLASS 30

120.3 4,397,087
296 R 4,397,088
373 4,397,089

CLASS 33

25 R 4,397,090
127 4,397,091
148 R 4,397,092
174 L 4,397,093
181 R 4,397,094
4,397,095
4,397,096
182 4,397,097
304 4,397,098
367 4,397,099

CLASS 34

9 4,397,100
30 4,397,101
57 A 4,397,102
155 4,397,103

CLASS 36

29 4,397,104
106 4,397,105

CLASS 37

57 4,397,106

CLASS 42

1 ST 4,397,107
50 4,397,108
4,397,109
65 4,397,110
73 4,397,111
94 4,397,112

CLASS 43

15 4,397,113

CLASS 44

51 4,397,653
53 4,397,654
66 4,397,655

CLASS 47

81 4,397,114

CLASS 48

86 R 4,397,657
202 4,397,656

CLASS 49

70 4,397,115
501 4,397,116
4,397,117

CLASS 51

72 R 4,397,658
74 R 4,397,118
165 R 4,397,119
170 MT 4,397,120

CLASS 52

1 4,397,121
3 4,397,122
100 4,397,123
126.4 4,397,124
127.3 4,397,125
199 4,397,126
241 4,397,127
293 4,397,128
528 4,397,129

CLASS 53

77 4,397,130
254 4,397,131
471 4,397,132
485 4,397,133

CLASS 55

41 4,397,659
48 4,397,660
158 4,397,661
228 4,397,662
387 4,397,663

CLASS 56

98 4,397,134
377 4,397,135
500 4,397,136

CLASS 57

22 4,397,137
4,397,138
4,397,139
4,397,140
58.59 4,397,141
238 4,397,142
355 4,397,143
414 4,397,144

CLASS 59

78 4,397,145

CLASS 60

39.75 4,397,146
202 4,397,147
223 4,397,148
254 4,397,149
527 4,397,151
641.15 4,397,152
641.8 4,397,150
649 4,397,153

CLASS 62

5 4,397,154
6 4,397,155
4,397,156
180 4,397,157
183 4,397,664
380 4,397,158
382 4,397,159

CLASS 65

27 B1 4,074,990
12 4,397,665
18.3 4,397,666
30.13 4,397,667
30.14 4,397,668
4,397,669
33 4,397,670
60.52 4,397,671
114 4,397,672
374.11 4,397,673

CLASS 66

120 4,397,160
178 A 4,397,161

CLASS 68

5 E 4,397,162
53 4,397,163
200 4,397,164

CLASS 70

1.5 4,397,165
276 4,397,166
370 4,397,167
417 4,397,168

CLASS 71

9 4,397,674
28 4,397,675
72 4,397,678
86 4,397,676
88 4,397,677
92 4,397,679
094 4,397,680
106 4,397,681

CLASS 72

10 4,397,169
68 4,397,170
348 4,397,171
356 4,397,172
392 4,397,173
419 4,397,174
453.02 4,397,175

CLASS 73

35 4,397,176
61.4 4,397,177
114 4,397,178
118 4,397,179
119 A 4,397,180
152 4,397,181
293 4,397,182
4,397,183
432 R 4,397,184
504 4,397,185
584 4,397,186
589 4,397,187
651 4,397,188
861 4,397,189
861.04 4,397,190
861.18 4,397,191
861.22 4,397,192
861.28 4,397,193
4,397,194
861.74 4,397,195
862.23 4,397,196

CLASS 74

202 4,397,197
378 4,397,198
422 4,397,199
473 R 4,397,200
730 4,397,201

CLASS 75

0.5 A 4,397,682
58 4,397,683
59 4,397,684
60 4,397,685
63 4,397,686
68 R 4,397,687
77 4,397,688
108 4,397,689
4,397,690
123 B 4,397,691

CLASS 82

4 R 4,397,202

CLASS 83

156 4,397,203
289 4,397,204
364 4,397,205
399 4,397,206
490 4,397,207
880 4,397,208

CLASS 84

1.03 4,397,209
4,397,210
1.26 4,397,211
313 4,397,212
453 4,397,213

CLASS 89

1 E 4,397,214
1.816 4,397,215
33 CA 4,397,216
177 4,397,217

CLASS 91

26 4,397,218
376 R 4,397,219
408 4,397,220
420 4,397,221
515 4,397,222

CLASS 98

40 D 4,397,223
50 4,397,224
66 R 4,397,225
115 R 4,397,226

CLASS 99

334 4,397,227
541 4,397,228

CLASS 100

7 4,397,229
45 4,397,230
117 4,397,231
214 4,397,232

CLASS 101

35 4,397,233
93.29 4,397,234
141 4,397,235
350 4,397,236
352 4,397,237
367 4,397,238

CLASS 102

275 4,397,239
376 4,397,240

CLASS 104

2 4,397,241
173 R 4,397,242

CLASS 105

159 4,397,243

CLASS 108

6 4,397,244
7 4,397,245
55.3 4,397,246
57.1 4,397,247

CLASS 110

263 4,397,248

CLASS 112

79 R 4,397,249
184 4,397,250
277 4,397,251
299 4,397,252

CLASS 114

218 4,397,253
261 4,397,254
294 4,397,255
303 4,397,256
304 4,397,257

CLASS 118

50 4,397,258
323 4,397,259
421 4,397,260
505 4,397,261
620 4,397,262
643 4,397,263
656 4,397,264
694 4,397,265

CLASS 119

73 4,397,266

CLASS 122

4 D 4,397,267

CLASS 123

25 L 4,397,268
41.33 4,397,269
90.16 4,397,270
90.55 4,397,271
145 A 4,397,273
179 A 4,397,272
185 BB 4,397,274
339 4,397,275
342 4,397,276
373 4,397,277
440 4,397,278
4,397,279
449 4,397,280
486 4,397,281
487 4,397,282
494 4,397,283
502 4,397,284
4,397,285
523 4,397,286
557 4,397,287
4,397,288
571 4,397,289
618 4,397,290
640 4,397,291

CLASS 126

61 4,397,292
69 4,397,293
121 4,397,294
360 A 4,397,296
365 4,397,297
369 4,397,298
391 4,397,299
419 4,397,300
422 4,397,301
440 4,397,302
442 4,397,303
443 4,397,304
448 4,397,305

CLASS 128

28 4,397,306
76 R 4,397,307
88 4,397,308
132 D 4,397,309
303.1 4,397,310
305 4,397,311
325 4,397,312
399 4,397,313
4,397,314
403 4,397,315
419 PG 4,397,316
680 4,397,317
763 4,397,318

CLASS 130

27 HF 4,397,319

CLASS 131

84 R 4,397,320
334 4,397,321

CLASS 132

7 4,397,322
11 R 4,397,323
73.5 4,397,324
76.4 4,397,325
88.5 4,397,326
89 4,397,327

CLASS 134

2 4,397,692
6 4,397,693
76 4,397,328
151 4,397,694

CLASS 136

248 4,398,053
255 4,398,054
258 4,398,055
259 4,398,056

CLASS 137

100 4,397,329
270 4,397,330
375 4,397,331
385 4,397,332
574 4,397,333
624.11 4,397,334
625.19 4,397,335
636.2 4,397,336

CLASS 138

118.1 4,397,337
145 4,397,338

CLASS 139

1 C 4,397,339
452 4,397,340

CLASS 140

147 4,397,341

CLASS 144

1 F 4,397,342
209 A 4,397,343

CLASS 148

1.5 4,397,695
11.5 A 4,397,696
12 C 4,397,699
12 F 4,397,697
4,397,698

CLASS 149

7 4,397,700

CLASS 152

209 R 4,397,344
406 4,397,345

CLASS 156

62 4,397,701
153 4,397,702
177 4,397,703
201 4,397,704
242 4,397,705
4,397,706
307.5 4,397,707
345 4,397,708
351 4,397,709
475 4,397,710
643 4,397,711

CLASS 160

84 R 4,397,346
231 R 4,397,347

CLASS 162

19 4,397,712
261 4,397,713

CLASS 165

41 4,397,348
95 4,397,349
159 4,397,350

CLASS 166

134 4,397,351
260 4,397,352
281 4,397,353
294 4,397,354
297 4,397,355
303 4,397,356
345 4,397,357

CLASS 172

44 4,397,358
430 4,397,359

CLASS 174

2 4,398,057
106 D 4,398,058

CLASS 175

61 4,397,360
329 4,397,361
393 4,397,362
410 4,397,363

CLASS 177

25 4,397,364

CLASS 179

1 GD 4,398,060
1 SM 4,398,059
1 VL 4,398,061
1.5 E 4,398,062
2 EB 4,398,063

18 AH 4,398,064
18 FG 4,398,065
70 4,398,066
189 D 4,398,067

CLASS 180

68.5 4,397,365
116 4,397,366
117 4,397,367
143 4,397,368
205 4,397,369
210 4,397,370
271 4,397,371
277 4,397,372

CLASS 182

17 4,397,373
129 4,397,374
206 4,397,375

CLASS 184

7 D 4,397,376

CLASS 187

29 R 4,397,377

CLASS 190

52 4,397,378

CLASS 191

23 A 4,398,068

CLASS 192

0.032 4,397,379
84 C 4,397,380
84 T 4,397,381

CLASS 194

61 4,397,382

CLASS 198

333 4,397,383
341 4,397,384
345 4,397,385
491 4,397,386

CLASS 200

6 R 4,398,069
16 R 4,398,070
67 DB 4,398,071
146 R 4,398,072
295 4,398,073
302 4,398,074
314 4,398,075

CLASS 204

1 T 4,397,714
11 4,397,715
33 4,397,716
55 Y 4,397,717
4,397,718
91 4,397,719
98 4,397,720
4,397,735
144 4,397,721
159.13 4,397,722
159.15 4,397,723
192 E 4,397,724
197 4,397,726
206 4,397,727
243 M 4,397,728
243 R 4,397,729
252 4,397,730
406 4,397,725

CLASS 206

45.23 4,397,387
309 4,397,388
387 4,397,389
391 4,397,390
526 4,397,391
528 4,397,392
549 4,397,393
608 4,397,394

CLASS 208

8 LE 4,397,731
4,397,732
11 LE 4,397,736
48 AA 4,397,737
96 4,397,733
4,397,734
161 4,397,738
210 4,397,739
482 4,397,740

CLASS 209

170 4,397,741

CLASS 210

225 4,397,744
228 4,397,746
237 4,397,745
641 4,397,747
716 4,397,742
733 4,397,748
735 4,397,743

CLASS 211

60 T 4,397,395

CLASS 212

189 4,397,396

CLASS 215

211 4,397,397

CLASS 219

10.55 A 4,398,076
10.55 E 4,398,077
69 M 4,398,078
121 EC 4,398,079
130.1 4,398,080
202 4,398,081
370 4,398,082
479 4,398,083
528 4,398,084

CLASS 220

7 4,397,398
222 4,397,399
259 4,397,400
260 4,397,401
268 4,397,402
269 4,397,403
306 4,397,404

CLASS 222

14 4,397,405
105 4,397,406
132 4,397,407
394 4,397,408
414 4,397,409

CLASS 225

98 4,397,410

CLASS 226

173 4,397,411

CLASS 227

119 4,397,412

CLASS 228

174 4,397,413

CLASS 229

5.7 4,397,414
17 R 4,397,415
52 BC 4,397,416
92.3 4,397,417

CLASS 235

145 R 4,398,086
200 PF 4,398,087
379 4,398,088

CLASS 237

59 4,397,418

CLASS 238

10 F 4,397,419

CLASS 239

154 4,397,420
177 4,397,421
307 4,397,422
4,397,423

CLASS 241

20 4,397,424
30 4,397,427
169.1 4,397,425
275 4,397,426

CLASS 242

201 4,397,428

CLASS 244

3.11 4,397,429
3.16 4,397,430
53 B 4,397,431
118.6 4,397,432
137 R 4,397,433
158 R 4,397,434

CLASS 248

61 4,397,435
68 R 4,397,436
72 4,397,437
229 4,397,438
292.1 4,397,439
550 4,397,440

CLASS 249

19 4,397,441

CLASS 250

339 B1 4,247,773
299 4,398,090
336.1 4,398,089
343 4,398,091
361 R 4,398,092
483.1 4,398,093
492.1 4,398,094

CLASS 251

129 4,397,443
144 4,397,444
149.9 4,397,445
309 4,397,446
342 4,397,442
356 4,397,447

CLASS 252

42.7 4,397,749
51.5 A 4,397,750
62.54 4,397,751
70 4,397,752
79.3 4,397,753
91 4,397,754
113 4,397,755
182 4,397,756
186.41 4,397,757
370 4,397,760
429 B 4,397,762
4,397,763
4,397,764
429 C 4,397,761
430 4,397,765
431 P 4,397,767
431 R 4,397,766
432 4,397,768
458 4,397,769
465 4,397,770
467 4,397,771
477 R 4,397,772
518 4,397,773
4,397,774
4,397,775
527 4,397,776
536 4,397,777
609 4,397,759
627 4,397,778

CLASS 256

65 4,397,448

CLASS 260

112.5 R 4,397,779
112.5 T 4,397,780
152 4,397,781
239.5 4,397,782
245.2 R 4,397,783
245.2 T 4,397,784
396 N 4,397,785
404 4,397,786
429 R 4,397,787
441 4,397,788
463 4,397,789
936 4,397,790
981 4,397,791

CLASS 261

23 A 4,397,792
30 4,397,793
79 A 4,397,794
89 4,397,795

CLASS 264

24 4,397,796
45.5 4,397,797
46.5 4,397,798
53 4,397,799
61 4,397,800
140 4,397,801
219 4,397,802
272.15 4,397,803
292 4,397,804
328.14 4,397,805
4,397,806
512 4,397,807
521 4,397,808

CLASS 266

106 4,397,449
193 4,397,450
252 4,397,451

CLASS 267

8 R 4,397,452
180 4,397,453

CLASS 269

49 4,397,454

CLASS 271

3.1 4,397,455
10 4,397,456
12 4,397,457
14 4,397,458
94 4,397,459
263 4,397,460
293 4,397,461

CLASS 272

130 4,397,462

CLASS 273

1 GE 4,397,463
1.5 R 4,397,464
86 D 4,397,465
149 R 4,397,469
156 4,397,466
256 4,397,467
381 4,397,468

CLASS 277

1 4,397,470
27 4,397,471
235 B 4,397,472

CLASS 280

6 H 4,397,473
423 A 4,397,474
495 4,397,475
656 4,397,476
709 4,397,477
711 4,397,478
764.1 4,397,479
777 4,397,480
781 4,397,481
802 4,397,482

CLASS 282

27.5 4,397,483

CLASS 285

81 4,397,484
111 4,397,485
368 4,397,486

CLASS 290

53 4,398,095
55 4,398,096

CLASS 292

202 4,397,487
210 4,397,488
347 4,397,489

CLASS 293

120 4,397,490

CLASS 294

64 R 4,397,491
81 R 4,397,492
4,397,493
86.1 4,397,494
88 4,397,495

CLASS 296

1 S 4,397,496
26 4,397,497
182 4,397,498
218 4,397,499

CLASS 297

118 4,397,500
301 4,397,501

CLASS 299

2 4,397,502
8 4,397,503

CLASS 301

37 P 4,397,504

CLASS 303

7 Re.31,337
9 4,397,505
24 C 4,397,506

CLASS 307

64 4,398,097
140 4,398,098
246 4,398,099
264 4,398,100
445 4,398,101
449 4,398,102
454 4,398,103
490 4,398,104
518 4,398,105
549 4,398,106

CLASS 308

217 4,397,507

CLASS 310

49 R 4,398,107
54 4,398,108
80 4,398,109
83 4,398,110
93 4,398,111
201 4,398,112
232 4,398,113
313 A 4,398,115
313 R 4,398,114
334 4,398,116
348 4,398,117

CLASS 312

312 4,397,508
320 4,397,509

CLASS 313

466 4,398,119
527 4,398,118

CLASS 315

1 4,398,120
4 4,398,121
5.38 4,398,122
46 4,398,123
74 4,398,124
86 4,398,125
127 4,398,126
151 4,398,127
158 4,398,128
208 4,398,129
226 4,398,130
294 4,398,131
307 4,398,132
411 4,398,133

CLASS 318

254 4,398,134
443 4,398,135
561 4,398,136
601 4,398,137
603 4,398,138

CLASS 320

2 4,398,139
36 4,398,140

CLASS 323

211 4,398,141
226 4,398,142
370 4,398,143

CLASS 324

51 4,398,144
62 4,398,145
73 R 4,398,146
78 R 4,398,147
307 4,398,148
319 4,398,149
4,398,150
323 4,398,151
465 4,398,152

CLASS 328

16 4,398,153
58 4,398,154
73 4,398,155
150 4,398,218
233 4,398,156

CLASS 330

86 4,398,157
136 4,398,158
262 4,398,159
288 4,398,160

CLASS 333

156 4,398,161
189 4,398,162
193 4,398,163
222 4,398,164

CLASS 335

202 4,398,165
212 4,398,166
272 4,398,167

CLASS 337

58 4,398,168

CLASS 338

25 4,398,169
198 4,398,170

CLASS 339

17 CF 4,397,510
4,397,511
75 M 4,397,512
91 R 4,397,513
95 D 4,397,514
177 R 4,397,515
4,397,516
217 S 4,397,517
255 R 4,397,518
4,397,519

CLASS 340

22 4,398,171
38 P 4,398,172
52 R 4,398,173
53 4,398,174
73 4,398,175
310 A 4,398,178
347 AD 4,398,179
365 L 4,398,180
365 S 4,398,181
388 4,398,182
500 4,398,183
531 4,398,184
573 4,398,185
616 4,398,186
626 4,398,187
650 4,398,188
721 4,398,189
728 4,398,190
825.32 4,398,191
825.44 4,398,192
825.76 4,398,193
870.37 4,398,194

CLASS 343

6.5 R 4,398,195
17.1 R 4,398,196
100 LE 4,398,197
103 4,398,198
700 MS 4,398,199
756 4,398,200
815 4,398,201

CLASS 346

29 4,398,202
135.1 4,398,203
140 4,398,204

CLASS 350

1.4 4,397,520
6.8 4,397,521
96.20 4,397,523
96.21 4,397,522
96.25 4,397,524
162.17 4,397,525
310 4,397,526
400 4,397,527
429 4,397,528
526 4,397,529
541 4,397,530

CLASS 351

210 4,397,531

CLASS 352

129 4,397,532

CLASS 354

23 D 4,397,533
4,397,534
212 4,397,535
322 4,397,536

CLASS 355

3 BE 4,397,538
3 DD 4,397,539
4,397,546
3 R 4,397,537
14 R 4,397,540
4,397,542
14 SH 4,397,541
40 4,397,543
58 4,397,544
77 4,397,545

CLASS 356

1 4,397,547
5 4,397,548
4,397,549
28.5 4,397,550
73.1 4,397,551
215 4,397,552
226 4,397,553
239 4,397,554
248 4,397,555
301 4,397,556
342 4,397,557
354 4,397,558
404 4,397,559
440 4,397,560

CLASS 357

38 4,398,205
46 4,398,206
51 4,398,207
81 4,398,208

CLASS 358

27 4,398,209
36 4,398,210
93 4,398,211
4,398,212
111 4,398,213
118 4,398,214
120 4,398,215
121 4,398,216
138 4,398,217
167 4,398,219
188 4,398,220
284 4,398,221
287 4,398,222
335 4,398,223
339 4,398,224

CLASS 360

39 4,398,225
65 4,398,226
71 4,398,227
77 4,398,228
113 4,398,229

CLASS 361

1 4,398,230
23 4,398,231
47 4,398,232
78 4,398,233
218 4,398,234
220 4,398,277
393 4,398,235
419 4,398,236

CLASS 362

186 4,398,237
187 4,398,238
263 4,398,239

311 4,398,240

CLASS 364

167 4,398,241
183 4,398,242
200 4,398,243
4,398,244
4,398,245
4,398,246
4,398,247
4,398,248
300 4,398,249
404 4,398,250
414 4,398,251
426 4,398,252
466 4,398,253
472 4,398,254
492 4,398,255
515 4,398,256
550 4,398,257
551 4,398,258
4,398,259
565 4,398,260
571 4,398,261
724 4,398,262
733 4,398,263
900 4,398,264
4,398,265

CLASS 365

103 4,398,266
182 4,398,267
190 4,398,268
195 4,398,269
203 4,398,270

CLASS 366

21 4,397,561

CLASS 367

20 4,398,271
33 4,398,272
73 4,398,273
90 4,398,274
137 4,398,275
191 4,398,276

CLASS 368

63 4,397,562
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	313	270,015		70	270,032		124	270,048			270,064		13	270,080	D26—	26	270,095
D3—	30.1	270,016		306	270,033		204	270,049			270,065		25	270,081		28	270,096
	76	270,017		381	270,034		205	270,050			270,066	D23—	94	270,082	D27—	9	270,097
D6—	16	270,019		382	270,035	D13—	99	270,051			270,067			270,083		41	270,098
	31	270,020	D9—	305	270,036	D14—	33	270,052			270,068			270,084	D28—	3	270,099
	57	270,021		383	270,037		56	270,054		38	270,069		97	270,085		64	270,100
	113	270,022		389	270,038		66	270,053	D18—	1	270,070			270,086	D30—	1	270,101
	114	270,023		393	270,039		109	270,055		12	270,071		127	270,087		38	270,102
	146	270,024		413	270,040	D15—	10	270,056	D19—	26	270,072		155	270,088		43	270,103
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	360	270,030		79	270,046			270,062	D22—	7	270,078		80	270,093	D92—	1 E	270,108

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